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THE
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THE FEDERAL RESERVE BANKING
SYSTEM IN OPERATION

SUMMARY

Necessarily slow development of the system, 628. — Organisation, number and location of banks, 630. — Opening of reserve banks and reduction of required reserve of member banks, 637. — Rediscounting operations, 641. — Open market operations, 645. — United States bonds and municipal notes, 646. — Trade and bank acceptances, 647. — The nation-wide check collection system, 653. — State banks and the reserve system, 662.

THE Federal Reserve Act was passed on December 23, 1913, and after nearly a year devoted to the work of preliminary organization the reserve banks were opened for business on November 16, 1914. At that time much remained to be done before the banks were prepared to undertake all the various activities authorized by the Act. Even now, after a year and a half of operation, methods of conducting some of these activities are still being worked out. This prolonged period of initial development is by no means to be regarded as evidence of any lack of a high degree of ability in the management of the system. On the contrary, the management is to be credited with far more of solid accomplishment than might have been anticipated when account is taken of the limitations of the Reserve Act and the

complicated and novel nature of many of the problems to be solved in establishing the system.

It can only be as a result of a slow process of growth that the reserve system can reach the full measure of its development and exercise its various functions completely and effectively. Evidently, then, actual experience with the working of the banks does not as yet furnish an adequate basis for anything beyond the most tentative conclusions regarding the merits and defects of the system. A review of what has been so far accomplished should, however, at all events, yield a better understanding of the nature of the system and of the difficulties which must be overcome in its development than was possible two and one-half years ago, immediately after the passage of the Federal Reserve Act.

It has, for example, become far more evident that the organization of the reserve banks and the acquisition by them of considerable resources were but a first, and that perhaps the simplest, stage in the development of the system. The reserve banks are a group of central banks. They have been provided with resources and given special powers for the purpose of strengthening and safeguarding the entire credit structure of the country. But ample resources, extensive powers, and also able management, tho all absolutely essential, do not of themselves constitute a central banking institution. If the reserve banks are to be anything more than rather cumbersome and expensive emergency institutions, they must be something more than a resource upon which other banks rely for assistance when subjected to unusual demands for money and credit from their own depositors. The reserve banks must be able to exert some influence upon the financial situation in ordinary times. Such an influential position in the banking world is not readily secured. In all other countries

having central banks it was gained at a comparatively early stage of banking development. Commonly, it was an unintended consequence of the grant of a more or less complete monopoly of the issue of bank notes to a single institution. Wherever, and this is everywhere, in the early stages of the development of banking, the bank note was the principal instrument of bank credit, the other banks found themselves in a position of constant dependence upon the institution enjoying the monopoly of issue. Later came general recognition of the advantage which a banking system derives from a central institution which accepts the responsibility of safeguarding the credit structure, and consequently maintains itself in a condition of great strength at all times. This advantage has been great enough to insure the continuance of intimate relationships between ordinary banks and central banks long after the use of the check, as in England, has relegated the bank note to a position of relatively insignificant importance.

The United States presents a unique instance of the establishment of central banks long after its banking system had reached a high state of development. The power to extend credit in the form of bank notes, tho useful and perhaps indispensable to the reserve banks, does not place the other banks in a position of dependence upon them. These other banks are numerous, and have long been in intimate and, generally speaking, mutually satisfactory relationship with each other. Precisely because our banking system has developed without central banking machinery, banking methods and relations have been devised which in some respects are obstacles to the effective working of such a central organization.

This situation was not, and could not be, suddenly transformed when the reserve banks opened for business on November 16, 1914. The reserve banks were

then simply a group of extraneous institutions with which a portion of the other banks of the country were connected through various provisions of the Federal Reserve Act. Close business relationships between the reserve banks and the other banks were still to be developed, a development which will require many years before it approaches completion. Confidence in the ability of the management and in the financial strength of the reserve banks is perhaps all that is required to lead the banks to rely mainly upon them for emergency purposes. But if the reserve banks are to become a regular factor in the ordinary everyday operation of the banking machinery of the country, the reserve banks must demonstrate that they are able to perform various services for the banks more efficiently and at lower cost than by means of other agencies with which the banks have had long and satisfactory experience. Even then the modification of the established banking practices must be a gradual process.

The development of these service relationships with the other banks is a far more vital matter than the lending operations of the reserve banks during this initial stage of the development of the system. The resources of the existing banks are sufficient to enable them to meet all ordinary demands for accommodation without resort to the reserve banks. Aside from periods of acute financial strain, the reserve banks will only intermittently as lenders come in contact with their member banks. In the following pages I shall therefore be mainly concerned with the consideration of what has so far been accomplished toward the development of intimate relations between the reserve banks and the other banks of the country.

The difficulties encountered in providing a fully developed banking system with central banking ma-

chinery are strikingly reflected in the provisions of the Federal Reserve Act designed to secure to the reserve banks ample funds for their operations. In the case of European central banks the general public has subscribed to the capital stock, and funds are received from all who may wish to maintain balances with them. These banks began in a comparatively small way and with a reasonable certainty of making adequate earnings. But since the banking system which our reserve banks are to serve is large, large resources at the very outset were essential. All banks entering into direct business relations with the reserve banks were therefore required to subscribe to the capital and deposit a part of their reserves in the reserve bank in the part of the country in which they were situated. But if the banks had been left full freedom of choice in the matter, it was by no means certain that the prospective advantages of the federal reserve system would attract a sufficient number of banks to provide adequate resources. In fact, only a very small number of banks which were not compelled to join — banks and trust companies organized under state law — have entered the system either at the beginning or since it has been in operation. The national banks were in an entirely different position. Within sixty days after the passage of the Federal Reserve Act they were obliged to signify their assent to its terms on pain of forfeiture of their charters. Conversion into state banks was possible but if any considerable number of national banks had refused to enter the system, they would have incurred a heavy loss on their holdings of 2 per cent government bonds deposited as security for their issues of bank notes. Only 18 out of 7493 national banks took this step, and the course of some of these was determined by other considerations. The organization of the reserve banks could accordingly

be perfected with the assurance that the banks would have very considerable resources when they were ready to begin operations.

In the meantime, the Reserve Bank Organization Committee, consisting of the Secretary of the Treasury, the Secretary of Agriculture, and the Comptroller of the Currency, was engaged upon the highly difficult task of dividing the country into not less than eight nor more than twelve districts, and the selection in each district of a city in which a reserve bank was to be established. This Committee announced its decision on April 2, 1914. It divided the country into the maximum number of districts, designating as Federal reserve bank cities Boston, New York, Philadelphia, Cleveland, Richmond, Atlanta, Chicago, St. Louis, Minneapolis, Kansas City, Dallas, and San Francisco.

A smaller number of districts would have been in some respects advantageous, particularly in ease of management and presumably in lower cost of operation. On the other hand, experience with the working of the system has not disclosed serious defects which would have been avoided if a smaller number of banks had been established. Moreover, in favor of the larger number of districts there were a number of considerations of more weight than any which could be advanced in favor of a smaller number. It is clearly desirable that all banks should have ready access to their reserve banks. Even with twelve districts the area of some of them, notably the San Francisco district, is undesirably tho necessarily large. Through the establishment of branches this difficulty can, it is true, be met in some measure. But it is significant that the entire directorate of the San Francisco Reserve Bank is drawn from that city and its vicinity. With a smaller number of districts it would have been necessary either to have greatly

enlarged the area of the southern districts and those west of the Mississippi River, already sufficiently large, or to have joined the Boston and Philadelphia districts to New York. Whatever merits the latter arrangement might have from a banking standpoint, it would have been distinctly contrary to the spirit of the Federal Reserve Act. Whether wisely or not, one of the avowed purposes of that measure was to lessen so far as possible the dominance of New York over the financial activities of the country. The size of each reserve bank, it will be recalled, is determined mainly by the size of its member banks. Owing to the relatively great banking resources of the northeastern states, and especially of New York City, the New York Reserve Bank, tho it includes only New York state and a part of New Jersey and Connecticut, has over 40 per cent of the resources of the twelve reserve banks. If the banks of the Boston and Philadelphia districts had been included, the resources of the New York Reserve Bank would have been increased to nearly 60 per cent.

An immediate tho secondary advantage of the decision to create the maximum number of districts should be noted. All important cities throughout the country without exception were desirous of being selected as the location of a reserve bank. Baltimore and New Orleans in particular were grievously disappointed at being in districts the reserve banks of which were placed in cities of less mercantile and banking importance as well as of smaller population. If there had been any possibility of forming additional districts, it is certain that overwhelming pressure would have been brought to bear to secure a modification of the work of the Organization Committee immediately upon the assumption of its duties by the Federal Reserve Board.

After all, local pride far more than positive business advantage was at stake in the selection of cities in which reserve banks have been established. When sufficient time has elapsed for the system to be fully developed and tested by experience, it may perhaps prove desirable to reduce or to enlarge the number of districts. Modifications of this sort will, however, require congressional action. The authority granted the Federal Reserve Board in the Reserve Act "to revise the determinations of the Organization Committee" has been interpreted by the Attorney General of the United States to extend only to modifications of the boundaries of districts and does not give the Board authority to reduce the number of districts or to change the location of reserve cities. Five changes in the boundaries of districts have been made by the Federal Reserve Board. The most important of these was the transfer of the banks of northern New Jersey from the Philadelphia to the New York district. Requests for more radical changes, such as the transfer of banks in Wyoming and Nebraska from the Kansas City to the Chicago district have very properly been deferred until sufficient time has elapsed to yield a better understanding of the working of the system. Further slight changes may be anticipated from time to time, but the need for important change will never be of an urgent nature requiring prompt action. These, as well as other fundamental changes, may well wait upon the slow procedure of legislative enactment.

Following the announcement of the division of the country into districts, the Organization Committee on April 8, 1914, gave notice of the period of thirty days during which member banks were required to subscribe an amount equal to 6 per cent of their own capital and surplus to the stock of the reserve banks. On May 18,

the organization certificate of the reserve banks was executed by five member banks in each district designated for the purpose. The banks in each district were then classified for electoral purposes into three groups equal in numbers; the first group contained the banks having the largest capital and surplus; the second group, those next in size; and the remaining banks in the third group. Nominations followed, and early in July each group of banks in the several districts elected two directors for its reserve bank. This somewhat cumbersome method of choosing directors is designed to insure representation to the smaller banks. The arrangement is one which might on occasion prove useful, but might also yield a management lacking in unity of purpose. With a small directorate consisting of men of wide business experience, a particular method of election is not likely to have much significance one way or the other. At all events, in the selection of these first directors it is probable that virtually the same men would have been chosen if each bank had cast a ballot for the entire number.

With the election of reserve bank directors by the member banks, the work of the Organization Committee was finished. No further steps could be taken toward the establishment of the banks without action by the Federal Reserve Board. It was doubtless no easy task to select the five members who together with the Secretary of the Treasury and the Comptroller of the Currency constitute this important body. Nominations were sent to the Senate on June 3, where objections to the confirmation of two of them were encountered. One nomination was finally withdrawn at the request of the nominee. After this delay, confirmation was secured on August 7, and on August 10, 1914, the members of the Board took the oath of office. The

membership of the Board was everywhere considered highly satisfactory, and the fear which many had entertained that it might be a political body was at least for the time being set at rest. Experience has not lessened this early confidence, tho the opinion may be ventured that the Reserve Board would have been somewhat strengthened if its membership included a banker of wide experience in the domestic banking practice and financial conditions in the northern half of the country. There are only two bankers on the Board, the minimum number required by the Reserve Act: one an acknowledged expert on everything relating to foreign and investment banking, the other an experienced southern banker. A lawyer, an economist, and a railroad executive, together with the ex-officio members, constitute the remainder of the Board.

Upon taking office the Federal Reserve Board at once gave its attention to the selection of three government directors for each of the reserve banks. It was not until these were appointed, shortly after the middle of September, that further progress could be made toward completing the organization of the system. In the meantime much valuable work of a preliminary nature had been performed by a committee of experts appointed early in the year by the Organization Committee. A report by these experts provided a useful concrete basis for the discussion of methods of internal organization, accounting practice, and the like, which were worked out by representatives of the banks in conference with the Reserve Board during October.

By far the most important duty devolving on the directors of the reserve banks in this stage of the organization was the selection of governors, as the chief executive officer of the reserve banks is styled. There is no mention of this important official in the Federal Reserve

Act, which simply provides that the Reserve Board shall designate one of the government directors as chairman of the board of directors for each reserve bank. In practice the governors have been the active managers of the banks, while the chairmen have been the channel through which the Federal Reserve Board acts in regulating and supervising the operations of the banks. Notwithstanding this division of responsibility, the arrangement has worked smoothly in practice. The governors have been a potent factor in the development of the system. They are all bankers comparable in standing and experience with the presidents of the banks in the cities in which the reserve banks are established. They occupy a position of greater dignity and influence than managers of branches could possibly attain. While the Reserve Act was passing through Congress, many bankers favored a central bank with branches. Happily, the plan of a decentralized system was adopted. Each Federal reserve bank is in large measure an independent institution managed by local people. Its officers and directors are in position to speak with authority for the different sections of the country which they represent. The judgment of the governors of the reserve banks, backed up by their boards of directors and supplemented by the representations of the advisory council, have had great weight in the development of the reserve system, and may be expected to counteract a seemingly inevitable tendency toward rigid bureaucratic management when business is conducted by government officials.

At the end of October the work of internal organization of the banks was still far from completion, and the Reserve Board had made little progress toward the precise determination for practical use of the numerous provisions of the Reserve Act regarding the operations

of the banks. In a normal period the opening of the banks would doubtless have been deferred until well after the beginning of the next year, but owing to the crisis which came with the outbreak of the European war it was deemed advisable to open them at the earliest possible moment. The strain of the crisis was, it is true, already diminishing, more rapidly, indeed, than was generally perceived; and altho the crisis was in many respects entirely unprecedented in character, a period of inactive business and monetary ease was to be anticipated. It was rightly believed, however, that the effect on sentiment of the opening of the banks would be good in all parts of the country and might be of great positive advantage in the South, which was threatened with disaster on account of the almost complete cessation of cotton exports.

In the disturbed condition of affairs it would still have been most venturesome to have opened the banks before perfecting their organization, if there had been serious danger that they would at once have been called upon to assume heavy financial responsibilities. Of this there was not the slightest likelihood on account of certain important provisions in the Federal Reserve Act. On the day of the opening of the reserve banks the required reserves of all the national banks were to be materially reduced. For banks in central reserve cities the reduction was from 25 per cent to 18 per cent of demand deposit liabilities, for reserve city banks from 25 per cent to 15 per cent, and for country banks from 15 per cent to 12 per cent. By these changes in the law the lending power of the banks was enlarged very much as it would have been if they had unexpectedly found themselves possessed of several hundred millions of additional cash in their vaults. Of course the banks were no stronger than before, except in so far as the

establishment of the reserve banks made possible the more effective use of reserves; but in a community which has made a somewhat slavish adherence to a definite reserve ratio a canon of sound banking, the effect of the change in the law was bound to be little short of magical. For reasons which will appear later, country banks and many banks in the reserve cities were unable to take full advantage of the reduction in reserve requirements; but banks in the central reserve cities, and notably those in New York, were able to do so as soon as the demand for loans would permit. A surplus reserve of the New York national banks of \$5,000,000, was increased at a stroke to over \$85,000,000, and from a condition of stringency the money market passed quickly to a state of comparative ease.

The immediate advantage to be gained from an early opening of the reserve banks was, it will be seen, not secured through the operations of the reserve banks. While the reduction in reserves could not have been made with safety if the operations of the reserve banks had not been in prospect, the immediate effects of the reduction required no action whatever on the part of the reserve banks beyond their formal existence. There was, of course, a possibility that the transfer of funds from member banks to the reserve banks which was to take place when they opened would occasion some temporary financial disturbance. But it was reasonably certain that the reduction in reserves was so considerable that there was no ground for serious apprehension. Accordingly, on October 26, 1914, the Secretary of the Treasury issued the formal notice, required by the Reserve Act, that the reserve banks would open on November 16, 1914. On October 28, the Reserve Board called upon member banks to make on November 1

their first payment on their subscriptions to the capital stock of the reserve banks, an amount equal to 1 per cent of their own capital and surplus. This payment brought into the reserve banks slightly more than \$18,000,000. Similar payments were made on February 1 and May 1, 1915, as required by the law. This completed the payment of one-half of the subscription of member banks to the capital stock of the reserve banks. The remainder is subject to call by the Federal Reserve Board at any time, but it is altogether unlikely that it will ever be required, since the present paid-up capital of the reserve banks is already undesirably large. The total paid-in capital of the banks is now, June, 1916, \$54,864,000. It is, of course, subject to constant slight fluctuations with changes in the capital and surplus of the member banks, and would be materially increased if state banking institutions generally were to enter the reserve system.

On November 16, 1914, the day the reserve banks opened, a much larger sum was transferred to them — a certain percentage of the required reserve of all member banks. Central reserve city banks deposited an amount equal to 7 per cent of their own deposits, reserve city banks a preliminary deposit of 3 per cent, and country banks 2 per cent. The total amount of these initial reserve deposits received by the reserve banks was in the neighborhood of \$230,000,000, so that with the first instalment of capital they began operations with cash resources of about \$250,000,000. These transfers of funds to reserve banks were made without the slightest financial disturbance or inconvenience to any class of banks. It had been anticipated that country banks and perhaps reserve city banks might make their payments to a considerable extent in drafts against balances with city correspondents, but all classes of

banks seem to have found it feasible to take the necessary funds from their own cash holdings, and to work thereafter with smaller amounts of cash in vault than had been their custom in the past. This conclusion is confirmed by the reports of the condition of the national banks to the Comptroller of the Currency, which show a smaller average cash reserve in the vaults of the banks than they were accustomed to maintain before the reduction in reserve requirements. It follows therefore that this initial transfer of funds to the reserve banks imposed no burden whatever on the member banks. In this important respect it was unlike later transfers which have involved some sacrifice on the part of many members of the system.

While the Reserve Act was passing through Congress, and while the banks were being organized, it was generally believed that rediscounts for member banks would be the principal avenue for the employment of their funds. Indeed, no other kind of business had been authorized by the Federal Reserve Board at the time the banks opened for business. Discount rates were fixed for rediscounts at rates varying with the maturity of the paper offered, and varying also to a slight extent for the same classes of paper as between the different districts. These rates ranged from $5\frac{1}{2}$ per cent to $6\frac{1}{2}$ per cent, and were in general at a level at least as high as prevailing rates for commercial loans of the best quality in the cities in which the reserve banks were established. But on account of the large amount of funds set free by the reduction in reserve requirements, there was almost no demand for rediscounts at the reserve banks except at those in the three southern districts. Rediscount rates were therefore quickly reduced, and at the close of the year, $4\frac{1}{2}$ per cent to 5 per cent were the ruling rates for most maturities. At that time the total

for rediscounts of all the reserve banks was \$10,593,000, of which rediscounts of the southern banks made up \$4,027,000. During 1915 rates were further reduced until 4 per cent became the rate for nearly all classes of rediscounts at all of the reserve banks. There was some increase in the amount of rediscounts, but the total at the end of the year 1915 was only \$32,000,000, and of this amount 74 per cent was at the three southern banks. No change in this situation is as yet apparent. The return for June 17, 1916, shows a total of discounts of \$20,425,000, of which \$13,307,000 represent business at the three southern banks.

The insignificant amount of rediscount business which has come to the reserve banks cannot be attributed to provisions in the Reserve Act regarding the character of paper which is eligible. Only loans the proceeds of which are to be used for commercial purposes, it will be recalled, are eligible for rediscount at the reserve banks. Soon after the banks opened, the Federal Reserve Board issued a circular containing regulations defining acceptable paper. These regulations, which were not to go into effect until after the middle of the following year, would have required a decided change in existing banking practice if any considerable amount of the loans of the banks were to be made eligible. The regulations were, however, speedily withdrawn when it was perceived that there was an entire absence of desire on the part of the banks to borrow. It was evident that the reserve banks were in no position to put pressure upon member banks, and that the attempt was certain to react unfavorably upon the Federal reserve bank system. Under the revised regulations any loan maturing within ninety days which a bank makes to a borrower whose current assets are in excess of his current liabilities is considered a com-

mercial loan, and consequently eligible for rediscount. A longer maturity of six months is authorized by the Reserve Act in the case of agricultural and live stock paper, and such loans constitute a considerable portion of the rediscounts of those of the reserve banks which have secured any considerable amount of business. On June 17, 1916, for example, 63 per cent of the loans of the Minneapolis bank consisted of agricultural and live stock paper, 36 per cent for the Dallas bank, and about 22 per cent for the Kansas City and Chicago banks. It is also significant that no small part of these agricultural discounts have come to the reserve bank under the stimulus of exceptionally low rates, 3 per cent and 3½ per cent on commodity paper which consists of loans secured by various agricultural staples in warehouse. Evidently the failure to secure a large volume of rediscounts is not to be explained by any obstacle for which either the Reserve Act or the management of the banks can be held responsible.

During the first few months of operation of the reserve banks the reduction in the required reserve of member banks and the inactivity of business following the crisis fully account for the slight demand for rediscounts. Since the early part of 1915, however, loans and other investments of banks throughout the country have increased by leaps and bounds, but the unprecedented inflow of gold from Europe has provided the basis for the resulting expansion of bank credits. In most parts of the country the banks have had at their disposal greater lending power than they could readily employ with safety and at remunerative rates. When more normal conditions return, all of the reserve banks will, doubtless, secure a greater amount of rediscounting business. But it is by no means certain that for all of them the increase will be very considerable. The

volume of funds which the banks of a large section of the country have at their disposal has been for many years quite sufficient to enable them to meet all demands for short time loans from solvent borrowers. In every section there are particular localities in which the demand for accommodation regularly or seasonally exceeds the resources of the local banks. These banks will be more or less regular patrons of the reserve banks, if they are offered as favorable terms as by other banks of the large cities which have served these bank borrowers in the past. Local borrowing requirements very generally exceed the resources of the southern banks, and consequently the three reserve banks in that section of the country will presumably find a constant rediscount demand for all of the funds which they may care to employ in ordinary times.

This method of employing any considerable proportion of the funds of the reserve banks in ordinary times will probably not be found feasible in all the districts, and would, moreover, be inadvisable. A policy which may be adopted with safety by a few of the smaller reserve banks and their member banks, relying, if need arises for assistance, upon banking institutions in other parts of the country, cannot be followed in the handling of the more important reserve banks or the system as a whole. Under our system of numerous local banks credit is far from being fluid. The accommodation granted by reserve banks to banks outside the money centers may be said to be placed in separate compartments. It is presumably serviceable to the several banks and to the business of the communities in which they are situated. But such loans taken as a class are not liquid. It is only in the money centers that both the demand for and the supply of credit are elastic, and readily responsive to slight changes in discount rates.

If banking in this country were conducted by a comparatively small number of large banks operating numerous branches from head offices in the large cities, rediscounts made to them by reserve banks would possess every desirable quality from the point of view of central banking policy. Sporadic loans made among thousands of scattered banks obviously have an entirely different character.

It would seem to follow, then, that there must be wide differences in functions and policies among the various reserve banks. An analogous situation is found in the business of most, if not all, of the European central banks. The business which they handle at their branches is largely local, and is comparatively little influenced by the changes in discount rates which are so potent a factor in European money centers. Similarly, some of the reserve banks, quite certainly the three southern banks and perhaps those of Minneapolis and Kansas City, will be mainly concerned with meeting the local demand within their own districts. Other reserve banks, particularly the New York bank and those of Philadelphia and Boston, will shape their policies primarily with reference to the financial situation not only in this country but in other countries as well. They will rediscount for the local member banks, but fortunately the demand from this source will probably not be great enough to absorb any very large proportion of their funds. If, contrary to expectation, in the future these reserve banks do experience a constant and substantial demand for rediscounts from local banks, it will be necessary for them to maintain far higher reserves than European central banks with their more liquid investments.

Rediscounts for the banks of the important cities would provide business satisfactory in character which

would be responsive to changes in discount rates, but it seems unlikely that any appreciable demand for accommodation will come from these banks except toward the close of periods of intense business activity and during the periods of crisis and severe financial strain which commonly follow such activity. The only other method of securing business which may possibly give the reserve banks some influence in the money markets of the country is to enter into competition with the city banks and deal directly with borrowers. This is also the only means of insuring the employment at all times of a sufficient portion of the funds of the reserve banks to enable them to meet expenses, to say nothing of the payment of dividends. These considerations were given much attention in framing the Federal Reserve Act, and accordingly the reserve banks were authorized to engage in certain "open market operations" after detailed regulations had been issued by the Reserve Board. These operations are, however, narrowly restricted and consist of the purchase and sale of United States government bonds, of state and municipal notes maturing within six months, and of bills of exchange arising out of commercial transactions.

Investments in government bonds and in municipal notes cannot give the reserve banks an influential position in the money markets of the country. At the most they simply enable the reserve banks to employ funds which would otherwise be idle. They may be an important source of income, but have no positive banking significance.

The provisions of the Reserve Act relating to government bonds are extremely complicated, and are designed primarily to insure the national banks against loss on their holdings of 2 per cent government bonds against which circulation has been issued. The reserve banks

are to purchase each year at least \$25,000,000 of these bonds, either from member banks, or, since this will also maintain the price of the bonds, in the open market. Each bank must take an amount of bonds equal to its proportion of the total capital and surplus of all of the reserve banks. On June 17, 1916, the banks held \$59,000,000 of these bonds. They may be used as security for bank notes issued under exactly the same conditions as the circulation of the national banks. They may also, losing the circulation privilege, be converted one-half into 3 per cent thirty-year government bonds and one-half into 3 per cent treasury notes, subject to the obligation of renewal each year for thirty years. If the 3 per cent bonds and notes prove marketable, much of each year's annual instalment will doubtless be converted; on the other hand, should the reserve banks find their holdings steadily on the increase, they will presumably be used as a basis for the issue of Federal Reserve Bank notes. One of the banks has already issued about two million dollars of these bank notes, which must be carefully distinguished from the Federal Reserve notes which have been issued by all of the banks.

Investments in municipal warrants or notes maturing within six months have provided an important means of employing the funds of the reserve banks during the present period of monetary ease. On June 17, 1916, the banks held \$22,300,000 of these securities, and at one time their holdings exceeded \$40,000,000. These municipal notes are a far more liquid investment than the government bonds, but, it may be repeated, dealings in them do not give the reserve banks any appreciable influence over the money markets of the country.

By far the most important open market operations in which the reserve banks may engage are dealings in bills

of exchange. The provision in the Reserve Act authorizing these operations would open a wide field of activity to the banks, were it not for the almost entire absence of the time bill of exchange in domestic business transactions in the United States. Many years ago the promissory note supplanted the bill of exchange in this country. For more than a generation, borrowers have been securing accommodation from the banks on their own notes, single name paper, or on the endorsed notes of their customers, double name paper. The authors of the Federal Reserve Act were strongly of the opinion that the bill of exchange is far superior to the promissory note for every banking purpose, and accordingly the note was excluded from open market operations by the reserve banks. The Federal Reserve Board evidently shares this view. While promissory notes are eligible for rediscount by member banks, a preferential rate has been established for rediscounts of trade acceptances — bills of exchange drawn by the seller of goods and accepted by the buyer. Rates for the purchase of this class of bills in the open market have also been established by some of the reserve banks. It is significant, however, that up to the present time only an insignificant amount of these bills has come to the reserve banks, either by purchase or rediscount.

It is certain that a return to the use of the trade acceptance as the common instrument in commercial dealings in this country cannot be accomplished speedily. The aggregate loans of the reserve banks in normal times in proportion to the loans of all the banks will be too small to make the preferential rate accorded the trade acceptance a potent influence in bringing about a change in present practice. The trade acceptance will not supplant the promissory note unless bankers generally and the business community as well

become convinced that the change is clearly advantageous. Upon this question there are wide differences of opinion. The fundamental point at issue is whether an analysis of the entire financial position of the borrower or a series of particular transactions affords the lender better safeguards against loss. To venture an opinion as to the final outcome would be hazardous, but it would seem reasonably certain that in the immediate future no considerable amount of domestic trade acceptances will be available for open market operations by the reserve banks.

The prospects for the development of the bank acceptance are somewhat more promising. Prior to the passage of the Federal Reserve Act, national banks could not engage in this branch of banking, and even now they are only permitted to accept bills arising from the foreign trade of this and other countries. In a few of the states, notably New York, there has been recent legislation authorizing state banks and trust companies to accept domestic bills, and a grant of this power to national banks, which is being urged by the Federal Reserve Board, will doubtless sooner or later be conferred by Congress.

The bank acceptance is unlike the trade acceptance in many important respects. It has most of the advantages both of the bill of exchange and of the promissory note. The accepting bank bases its readiness to accept upon very much the same considerations which are taken into account in discounting single name paper—the character and financial position of the borrower, as shown by financial statements and other information. It is, however, by no means certain that the bank acceptance will come to be commonly used in domestic business in this country. In Germany it is a method of borrowing favored both by banks and the business

community. In other countries, notably England, the use of the bank acceptance is confined almost entirely to foreign business. This difference in banking practice is apparently in large measure a consequence of differences in the available supply of funds at the disposal of the banks. In England where the supply of funds which the banks would willingly employ in domestic commercial loans has far exceeded the demand, the banks have naturally preferred to discount rather than to accept for their customers. A similar disinclination among bankers, coupled with the greater complexity of acceptance arrangements, as contrasted with the discount of notes and payment by checks, will work against the general adoption of the bank acceptance in domestic business in this country. Like the trade acceptance, therefore, the domestic bank acceptance seems to hold out little promise of becoming in the near future an extensive field for the open market operations of the reserve banks.

In the trade between countries the bill of exchange is not merely a convenient instrument, possibly, but not certainly superior to the promissory note — it is absolutely indispensable. To avoid entering upon the intricate details of foreign exchange operations, one reason among many must suffice. On account of the constant fluctuations in foreign exchange rates, the exporter almost invariably desires to convert his claim against the purchaser of goods into cash as soon as the goods are ready for shipment. This is readily accomplished through the sale of a bill of exchange drawn by the seller on the buyer and accompanied by shipping documents so drawn as to give control of the goods until the bill of exchange is either accepted or paid, in accordance with the tenor of the instrument. The security afforded by the bill of exchange with documents

attached is further enhanced if the bill is drawn upon a bank rather than upon the purchaser of the goods. For this reason, to an increasing extent the bank acceptance is displacing the commercial bill in foreign trade throughout the world. The importer, for example, secures an acceptance credit with a well-known bank in his own or in some other country, and instructs his agents or those from whom he purchases goods to draw bills accompanied by shipping documents upon the accepting bank. Similarly, the exporter draws bills on banks in his own or in some other country, with which his customers have established acceptance credits. These arrangements lessen the risk of loss, and since bank acceptances everywhere can be discounted at lower rates than trade acceptances, a better price is secured for the bills.

The bulk of the acceptance business arising out of the foreign trade of the entire world has for many years been conducted in London. The European war has enabled American banks to make some headway in its development. In this development the reserve banks have been an essential factor, through their readiness to buy acceptances at low rates of discount. A rate of from 2 per cent to 4 per cent was established for purchases of this class of bills in February, 1915. Most purchases hitherto have been made at rates ranging between $2\frac{1}{2}$ per cent and $2\frac{3}{4}$ per cent. These acceptances have been the largest single investment of the reserve banks and amounted on June 17, 1916, to \$64,943,000. All the reserve banks, with the exception of the Dallas bank, have invested in them, though they have mainly been purchased by the reserve banks of New York, Philadelphia, and Boston.

At the return of peace, it will be no easy matter to retain the acceptance business already acquired, to say

nothing about its further expansion. It is an advantage both to exporters and importers to have bills drawn upon a single central world market, rather than on cities in each of the countries with which they are trading. In all parts of the world there is a broad market for sterling bills, because not only trade with England, but with all other countries, has been handled by means of bills drawn on London. Persistent efforts to give bills on other money centers, notably Berlin, the standing of the London bill have not succeeded. If a prolonged period of peace is to be anticipated at the close of the present war, the supremacy of the London acceptance will presumably continue. In any event, if the acceptance business is to take its place as a regular activity of American banks, funds must be always available for the purchase of acceptances in this country at as low rates as in any of the other money markets of the world, regardless of the demands for loans arising out of purely domestic activities. If the acceptance business is regarded primarily as a means of employing temporarily idle funds, it will not be retained. Acceptances are a liquid investment for a market like London which has a firm grip on the bulk of the business. The London acceptance is also a liquid investment for foreign banks, but our own acceptances, during the initial development period, cannot be handled as a liquid investment by a market which aspires to place its bills on an equal footing with bills drawn upon London.

From this analysis of the loans and investments of the reserve banks, it will be seen that aside from their purchases of acceptances, they have not as yet exerted any appreciable influence upon the policies and activities of the other banks of the country. A period of a year and a half, especially one of monetary ease, furnishes no

adequate basis for positive conclusion, but the opinion may be hazarded that not much in this direction is likely to be accomplished in the immediate future. Rediscounts, to a varying number of the numerous small banks outside the large cities, together with a limited volume of open market operations in municipal notes and acceptances, would seem to be the fields within which the investments of the reserve banks will be made. City banks for a long time to come, when they experience slight temporary strain upon their resources, will apparently continue to rely upon the withdrawal of funds from the call loan market rather than upon rediscounts from reserve banks. Finally, there would seem to be no sufficient mass of business available to the reserve banks through open market operations to enable them to make their rates effective by entering and withdrawing from the market.

If these forecasts do not prove seriously at fault, the lending operations of the reserve banks will have little importance, except during periods of severe financial strain. For emergency purposes alone, however, the system would seem to be unnecessarily cumbersome and expensive. Fortunately, there is another service which the reserve banks can render, which will not only strengthen the banking system, but which will also enable them to enter into helpful and regular relations with all member banks. Already the reserve banks have put into successful operation a system of making settlements among themselves, which employs between banks in different places the familiar clearing principle of off-sets. Settlements are made weekly by debiting and crediting the account of each reserve bank with a gold settlement fund in which each bank maintains a balance. By this simple arrangement a very considerable part of the payments between different sections of

the country is completed with minimum shipments of currency or gold.

The direct advantage of the improvement secured through the gold settlement fund goes mainly to the banks of the large cities, since it is between them, in the final analysis, that settlements are made for all the mass of transactions between the different sections of the country. Much more than this can, however, be accomplished by the reserve banks, through the establishment of a universal system for the collection of checks. By this means the banking system can be greatly strengthened, and at the same time the burden of providing the resources of the reserve banks, which otherwise must fall heavily upon some of the member banks, can be lightened, if not entirely removed.

The funds of the reserve banks are mainly derived from the member banks, each contributing to the capital in proportion to its own capital and surplus, and also a portion of its required reserves. The transfer of the funds made at the time the reserve banks were opened did not, as we have seen, impose a burden on the banks, because the money was taken from cash in the vaults of the various members. But with the exception of the banks in central reserve cities, the initial transfer was only one of a succession of deposits which the member banks were required to place with their reserve bank. In addition to the initial transfer, (3 per cent of their deposits in the case of the reserve city banks, and 2 per cent in the case of the country banks) both these classes of banks were required to deposit three additional instalments of 1 per cent each, on November 16, 1915, and May 16 and November 16, 1916. Two of these instalments have already been transferred. When the process is completed the reserve deposits of the various classes of banks will be 7 per cent for the

central reserve city banks, 6 per cent for reserve city banks and 5 per cent for country banks.

The transfer of reserve deposits by the central reserve city banks tho a larger percentage of their own deposits than was required for the two other classes of banks, imposed absolutely no burden upon them. Obviously earnings are not affected in the slightest degree by transferring money which was formerly kept in the vaults of the banks to the vaults of the reserve banks. Moreover, the banks in the central reserve cities gained a very real advantage from the reduction in reserve requirements from 25 per cent to 18 per cent. On the other hand, the combined effects of the reduction in reserve and the transfers of deposits to the reserve banks are certainly advantageous to fewer banks in reserve cities and to practically none of the country banks. For reserve city banks, reserves were reduced from 25 per cent to 15 per cent, a greater reduction than for either of the other two classes of banks. But after November 16, 1917 (three years after the opening of the reserve banks) all of these reserves must be either in vault or in a reserve bank. Formerly one-half of the total requirement (12½ per cent) could consist of balances with reserve agents in central reserve cities, on which interest at the rate of 2 per cent was received in addition to a variety of important services. Similarly, country banks, whose reserve was reduced from 15 per cent to 12 per cent, could formerly count balances with agents in central reserve or reserve cities to the extent of three-fifths of the requirement. Under the provisions of the Reserve Act, after November 16, 1917, all balances with reserve agents cease to be available for reserve purposes. For both reserve city and country banks, the reserve on which no earnings can be made will be larger than before the passage of the reserve act — 15 per cent instead of

12½ per cent for reserve city banks, and 12 per cent instead of 6 per cent for country banks. As an offset there is, of course, the possibility of additional profit through the funds released by the reduction in the total reserve requirement. By lending at a higher rate than the 2 per cent received from reserve agents, the full amount of the funds set free by the reduction in reserve requirements, the loss of interest on balances with reserve agents may conceivably be offset and perhaps more than offset. Thus, for example, if a reserve city bank, having \$25,000 with reserve agents (12½ per cent of its deposit liabilities) should add 2½ per cent (\$5000) to its reserve, and lend the remaining \$20,000 at 4 per cent, its total earnings would be increased by the change. Greater difficulty would be experienced by a country bank, owing to the smaller reduction in reserve requirements. For example, a country bank having \$30,000 with agents (9 per cent of its deposit liabilities) after increasing its reserve in vault or in the reserve bank, by 6 per cent, would not earn as much as before, unless it could lend the remainder at 6 per cent.

Calculations of this nature are fanciful and have no practical value, because in addition to the interest received on balances, a variety of services are performed for depositing banks by city correspondents. Among these services the collection of checks is by far the most important. Regardless of reserve requirements, compensating balances must be retained with city correspondents so long as they continue to perform this service. It must further be noted that a considerable part of the balances with reserve agents, as reported by the banks to the Comptroller of the Currency, has always consisted of checks and drafts in process of collection. Reserves are computed by each bank from its own books, on which cash items are credited as soon as

they are mailed to city correspondents for collection. Under the new reserve requirements, since only cash in vault and balances with reserve banks can be included, transit items collected through other banks would be automatically excluded. Notwithstanding the reduction in reserve requirements, many, if not most, country banks and some reserve city banks face the possibility that the total amount of funds tied up as reserve and as compensating balances will be greater than before the passage of the Federal Reserve Act.

There are at least two obvious methods of affording relief to country banks from the burden imposed upon them under the reserve requirements of the Federal Reserve Act. The provision in the Act permitting country banks to count as reserves balances with agents to the extent of 2 per cent of their deposits until November 16, 1917, might be made permanent. So small a portion of the reserve of country banks would not, however, provide adequate compensatory balances with city correspondents. It would afford appreciable, but by no means adequate, relief.

The alternative method of relieving the country banks from the burden of the reserve requirements is for the reserve banks to take over the business of collecting checks and drafts for all the banks of the country. This is an enormous undertaking, and at first sight it seems manifestly impossible for the reserve banks to provide more satisfactory arrangements than country banks have enjoyed from city correspondents. Obviously the reserve banks cannot shoulder as heavy expenses as the city banks have incurred in interest and services in return for the balances of country banks. A reserve bank must retain much larger reserves and cannot earn so high an average rate as the ordinary city banks on the limited investments which they do make. More-

over, the generally admitted possibility of greatly reducing the total cost of check collections, through the establishment of a universal system, does not at first sight seem to concern the country bank, because the heavy burden of expense involved in the collection of checks under present arrangements has been absorbed by city banks. This immunity from expense has, however, been far more apparent than real. The collection of checks has indeed not been handled in such a way as to reduce costs to a minimum. It has been a pawn in the keen competition of city banks for country bank balances. Under the stress of competition the city banks have tolerated exchange deductions by banks remitting in settlement on checks of their own customers deposited in banks at a distance. The indirect routing of checks has flourished and scattered balances for collection purposes have been an inevitable consequence. No bank has escaped some share in the burden of these wasteful and haphazard collection arrangements. For the country bank the burden has consisted in the necessity of maintaining larger balances with city correspondents to compensate for collections than were needed for reserve or other banking purposes.

Under a unified collection system there will be some saving of internal expense to all banks in clerical work, stationery, and postage. This is, however, a small advantage in comparison with the gain which may be expected from the employment of funds released from compensating balances at rates above the customary 2 per cent interest return upon them. In order to accomplish these results, the collection system of the reserve banks must cover the entire country and include most of the banks. A partial system would not enable banks to discontinue compensating balances; it would simply increase existing complications. In June, 1915,

a voluntary system of check collections, confined to member banks within each district, was inaugurated, but it proved entirely unsatisfactory. Finally, on May 1, 1916, a plan for a nation-wide system was announced by the Federal Reserve Board. This plan went into effect on July 15, 1916. Each member bank may send to its reserve bank checks and drafts on all member banks which are required to remit at par throughout the entire country, and also upon such non-member banks as agree to remit at par to the reserve bank of the district in which they are situated. A service collection charge is to be imposed upon the basis of the actual cost of operation, and it is estimated that this charge will be in the neighborhood of one and one-half cents per item. The present number of banks in the reserve system, together with the state institutions which have been accustomed to remit at par in the past, include so large a proportion of all the banks in the country, that this collection system is expected to be sufficiently inclusive to yield most of the advantages of a universal system.

It is impossible to determine in advance in the case of any particular bank, whether it will gain or lose through the operation of this collection arrangement. Internal costs of handling checks will be reduced, but on the other hand all banks must pay a service charge, which, as we have seen, is estimated at one and one-half cents per item. Banks which have been accustomed to remit at par will lose nothing from the requirement of par remittance by the reserve banks. The non-par banks, and this includes some banks in all parts of the country and most banks in the West and South, will lose, in many instances, what has been a considerable source of gain. All banks will be able to work on smaller aggregate balances and invest a larger proportion of their

funds. The gain here will probably be large, because banks will be able to continue to include transit items to some extent in meeting reserve requirements. That part of the reserve of a bank which it must deposit with a reserve bank is to be determined from the books of the reserve banks and may not consist of items in process of collection. The optional portion of the reserve of each bank is, however, to be determined by the banks themselves from their own books. They may therefore include transit items which they have mailed to their reserve bank for collection, just as they have always done in determining the amount of their balance with reserve agents. The optional reserve of country banks is 3 per cent out of a total requirement of 12 per cent, for reserve city banks 4 per cent out of a total of 15 per cent, and for central reserve city banks 5 per cent out of a total of 18 per cent. It will thus be seen that the minimum actual reserve of the banks may be reduced to 9 per cent for country banks, 11 per cent for reserve city banks, and 13 per cent for those in central reserve cities. Here is a possibility of a practical reduction in reserve which would not have been feasible under the terms of the Reserve Act if the reserve banks had not undertaken the collection of checks. Even though many banks may not find it feasible to work down to this minimum, the possibility of making use of transit items in computing reserve requirements has positive advantages. Whatever actual balance above 9 per cent a country bank may deem it advisable to maintain can be placed with a city correspondent, where it will earn at least the customary 2 per cent and perhaps more, since the city bank will no longer be burdened with collection services.

Taking all these various considerations into account, it would seem reasonable to conclude that the banks which have been remitting at par in the past may find

the combined effect of the new reserve requirements and the collection system of the reserve banks of positive advantage. At all events, it would seem reasonably certain that no serious burden is being imposed upon them. Many of the non-par banks can hardly escape an immediate loss of income. Withdrawal from the reserve system will not enable a bank to continue to deduct exchange since postmasters have been directed to receive from the reserve banks and present over the counter for payment checks on banks which refuse to remit at par. In sections of the country such as New England, where through clearing house action exchange charges were generally given up, the banks survived the change, and perhaps, in part through the improved service thus given, have gained additional deposits and have earned reasonably satisfactory profits. At all events, the advantage to the entire country to be gained through a better organization of the methods of collecting checks is so great, that fortunately the complaints of numerous small bankers have not been allowed to prevent the inauguration of this important reform.

It should be emphasized in this connection that a universal collection system is something more than a device for reducing the costs of an important banking service. It is a most effective, perhaps the most effective, single means of strengthening the banking system of the country within the power of the reserve banks. Like a local clearing house, it will greatly economize the use of money in banking operations. At the same time it will do much to prevent the breakdown of the check machinery of the country, one of the main causes of difficulty in former crises. All the checks drawn on a solvent bank tend toward a close approximation with the checks on other banks which it receives from its depositors. When this system is fully developed, the

slight daily differences in balances between banks will be settled on the books of the reserve banks, just as has long been the practice of the banks of Great Britain on the books of the Bank of England. Requirements for money which a bank in good credit will experience will come only in response to the everyday needs of its depositors, a cause of slight variation, and for export purposes. Balances in the reserve banks will become vastly more serviceable. In periods of strain, banks borrowing from the reserve banks will, as in England, want deposits rather than notes or gold. These are the advantages to be gained from a universal collection system. If they were more commonly understood, general acceptance of the new arrangement would soon be secured.

If through this collection system the banks are relieved from the burden imposed under the reserve requirements of the Federal Reserve Act, the greatest obstacle to the entrance of state banking institutions into the reserve system will be removed. Only a few score of the thousands of state banks and trust companies have as yet become members, a few by conversion into national banks while others still retain their state charters. State banks have not been hostile to the system, but perceiving that its advantages could be indirectly enjoyed on the outside, they have waited until its effects upon earnings should become manifest.

The failure of most of the reserve banks during the first year of operation to earn enough to meet expenses and their limited 6 per cent dividend has also been a mild deterrent. This difficulty is happily being overcome, since notwithstanding the low rate of return on their investments, nearly all of the reserve banks are now earning enough to meet both of these requirements. A reduction in the amount of the paid-in capital of the banks is, however, desirable. It would lessen the temp-

tation to employ the funds of the banks from the motive of profit. It would not appreciably reduce the resources if half the amount of the paid-in capital were restored to the member banks.

A very serious obstacle to the entrance of state institutions generally into the reserve system would be removed if the law were to be so changed as to transfer the duties of the Comptroller of the Currency to the Federal Reserve Board. For many years after the establishment of the national banking system successive Comptrollers of the Currency limited their activities almost entirely to the routine duties of that office. They concerned themselves mainly with such matters as the issue and redemption of bank notes, general direction of the force of examiners, and with business relating to the winding up of failed banks. Little use was made of the wide discretionary powers lodged with them by the National Banking Law. Of late years in banking, as in the case of railroads and industries generally, there has been a growing tendency to subject the conduct of business to an increasing measure of public control. Bankers, like those engaged in other occupations, cannot expect to escape supervision of their activities. They may reasonably ask, however, that such power of control as may be vested in public authorities shall be exercised by a board and not by an individual. No one would think of conferring the powers of the Interstate Commerce Commission upon a single person, and when the control of the government over industrial corporations was recently enlarged, a Trade Commission was established to take the place of the Commissioner of Corporations. In the national banking field it is not necessary to create a new board. It is only necessary to transfer the duties of the Comptroller of the Currency to the Federal Reserve Board. In urging this change no

reflection whatever upon the present Comptroller of the Currency is intended or implied. It is simply urged as a natural and proper means of strengthening confidence in the administration of the Federal Reserve Banking system.

The activities of the reserve banks impinge upon so many complex monetary and banking problems, that it has only been possible to discuss them in a somewhat cursory fashion within the limits of a single article. The difficulties which are being encountered in fitting the reserve banks into our banking structure, and in making their operations a vital part of the banking business of the country are great. The full development of the reserve system will require a much longer period than was generally anticipated when the Federal Reserve Act was passed. Much real progress has unquestionably been made. The system has had the benefit of capable management, and no fundamental defects in its organic law have become manifest. Through the universal collection system the banking mechanism of the country will be greatly strengthened and improved. Altho the lending operations of the reserve banks in ordinary times may not prove to be as significant as was generally anticipated, they will be serviceable to many of the smaller banks. In periods of excessive business and credit expansion, by example at least, the reserve banks will be able to exert a restraining influence, while in emergencies they will not only afford relief through the ample resources at their disposal but also take the lead in securing united and efficient action by all the banks of the country. In sum, the future growth of the Federal Reserve Banking system in influence and usefulness would seem to be certain.

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FOX FARMING IN PRINCE EDWARD ISLAND: A CHAPTER IN THE HISTORY OF SPECULATION

SUMMARY

I. Establishment of the industry, 665. — The pioneers, their problems and achievements, 666. — II. Speculative development after 1910, 668. — The advance in prices, 669. — The advent of the promoter, 670. — The war and collapse of speculative activity, 671. — III. Some conclusions. — Fox farming a permanent industry, 675. — Promoters and stock selling, 675. — The economic factors, 677. — The psychological factors, 678. — Few cases of direct fraud, 680. — The present situation, 681.

I

AMONG the most recent efforts of man to bring the animal world under subjection for the satisfaction of his wants is the breeding of fur-bearing animals in captivity. Until four or five years ago few even knew such experiments were being made. Today the production of the prince of these fur-bearers — the silver fox — is an organized business, carried on largely by corporations with a capitalization of millions of dollars, and with thousands of shareholders scattered over Canada and the United States. This spectacular development, with its accompanying inflation of values, came to a sudden climax with the financial stringency incident to the breaking out of the war in Europe. Was this the bursting of another economic bubble, or merely an unfortunate event in the development of an unexplored field, counterparts of which are to be found in the initial history of many industries?

"This industry — fur farming — is so young that it is easy to locate its principal pioneers, who follow in

about this order: Robert T. Oulton, Charles Dalton, T. L. Burrowman, Johan Beetz, Captain James Gordon, Robert Tuplin, Silas Rayner, B. I. Rayner, Harry Lewis, John Champion, Holt Renfrew & Co., Ltd., Dr. Robertson, J. Perry."¹ To Messrs Oulton and Dalton, two farmer-trappers of the little Canadian province of Prince Edward Island, belongs the credit for first successfully breeding foxes in captivity; their experiments antedate the work of the others mentioned some ten years. Doubtless, too, many lessons were learned from the failure of earlier attempts to breed foxes in captivity such as were made by another Islander, William Haywood, particularly with reference to the difficulties incident to the breeding season. Finally in 1887 Oulton and Dalton decided to attempt the task, altho a partnership agreement was not arranged until 1894 or 1895. After the partnership was consummated a ranch was built on Mr. Oulton's farm on Cherry Island, and stocked with two pairs of silver foxes under the care of Mr. Oulton. This was the first successful fox ranch.

Meanwhile others were becoming interested; Mr. Burrowman was the first to succeed in Ontario, Mr. Beetz and the Holt Renfrew Co. in Quebec, Dr. Robertson in Maine. Their efforts, which resulted in some of the finest strains of foxes extant, seem to have been carried on entirely independent of the Prince Edward Island attempts. Other pioneers were neighbors of Oulton and Dalton who succeeded in securing from them either a pair of foxes for foundation stock or a single animal for cross-breeding with a fox obtained elsewhere. The efforts of these fortunate few, operating, it is said, under a "gentleman's agreement," succeeded in maintaining close control over the stock of silver foxes available until about 1910. Still others,

¹ I quote from "The Ranch Bred Fox."

however, were experimenting with red and cross foxes, so as to make themselves proficient ranchmen, in anticipation of the time when they too would be able to secure the coveted black beauties.

Many costly lessons had to be learned before fox ranching was placed on a permanent basis. Efforts to prevent escape, either by digging or climbing, resulted in the gradual evolution of the modern wire enclosures. Discovery of the foxes' monogamous habits led to the construction of separate apartments within these enclosures for each fox family. The nervous, excitable temperament of the creatures, frequently resulting in the female destroying her young if disturbed by any unusual occurrence or distracting noise, makes necessary the exclusion of visitors from January to July, and the exercise of the greatest caution by the regular attendants. The intestinal parasites to which the young are subject, digestive diseases, and other disorders which attack the fox, had to be discovered by experience. Here, as with human beings, prevention has been found better than cure. Large pens so as to give greater facilities for exercise, wholesome and agreeable foods, and a well drained ranch, cleanly and hygienic in all its appointments — these are the conditions for prevention, and their presence the indication of an experienced, successful rancher.

One further circumstance which needs to be noted is the range of prices realized by the ranchers for the fox pelts sold in the London market from 1900 to 1914. An account of sales published in the 1914 report of the Charles Dalton Silver Black Fox Co., Limited, records an average price of \$778.78 for 203 pelts sold during this period. This list apparently includes most of the ranch-bred silver foxes sold. The average for 25 pelts marketed in March, 1910, was \$1,339.48. One pelt at

this sale fetched \$2,627.96 and several others sold for over \$2,000. The 1911 average for 39 pelts was about \$900. Altho attempts were made to keep secret the prices realized, until the practice of selling foxes for breeders became general, the evident improvement in the financial condition of the few pioneers could not be concealed from their neighbors, who were jealously watching every development. Their interest was constantly being stimulated, and the excitement resulting from the publication of the 1910-1911 prices can be imagined.

Thus before 1910 fox farming had passed the initial stage of experimentation, and had become a profitable branch of animal breeding on the part of some half dozen pioneers in the industry. For some ten years small lots of silver fox pelts had been regularly disposed of by them on the London market. The prices realized were far in excess of what had been anticipated, and awakened in the minds of the hardy farmers dreams of wealth such as could never have been realized from their ordinary vocation. Furthermore, many others had been perfecting themselves in the details of ranchcraft by experimenting with foxes of lesser value, and were eagerly awaiting an opportunity to enter the new field of endeavor. Conditions were ripe for a rapid expansion of interest, which was destined to spread far beyond the neighborhood of these remote Island farmers.

II

The preceding summary statement affords the background necessary for a proper appreciation of the remarkable speculative development which has characterized the industry since 1910, the date when selling foxes as breeders became general. The limited supply,

so closely controlled, made easy the rapid determination of a standard price for pups. The returns actually realized for pelts — about \$1,500 to \$2,000 for the best grades — provided an easily calculated minimum supply price, and the price so calculated was that at which pups were at first offered. The demand by the experienced ranchers and their friends was sufficient to absorb the entire supply at such a price. When the sale of breeders first began, therefore, the price of fox pups was virtually the value of their fur, and the demanders, not the suppliers, were the importunate parties. In view of later developments this fact should be carefully noted.

But prices did not long remain at the level of pelt valuation. Mr. J. W. Jones, in his excellent monograph prepared for the Canadian Conservation Commission on Fur Farming in Canada, remarks that "the price of a pair of five months old silver fox pups of the best Prince Edward Island stock has risen as follows:

September, 1909.....	\$3,000
" 1910.....	4,000
" 1911.....	6,000
" 1912.....	10,000
" 1913.....	16,000

The wide and rapid departure from pelt prices has the appearance of highly inflated values, and suggests the intervention of the skilled manipulator.

Interest in fox farming, as has been said, spread throughout the entire province, and indeed far beyond. But an evident obstacle to general participation in the industry was the price at which silver foxes were sold. Prince Edward Island is almost entirely rural; its people are intelligent, thrifty, and prosperous. The per capita savings bank deposits are exceeded by few similar communities anywhere. But even in such a community

few would be able to raise conveniently the ready cash necessary to secure even one pair of pups, and this became increasingly difficult as prices advanced. Hence from the first some form of business association was practically a necessary adjunct of fox farming. For two years partnerships were the means by which the smaller investors secured participation in the industry. But, as might have been anticipated, the well-known limitations to successful partnerships, and the need for ever increasing amounts of capital, soon suggested the advantages of the corporate form of organization.

The first corporation organized to engage in the fox business is said to have been the Silver Fox Ranching Company, incorporated in Massachusetts in 1911, to do business in Prince Edward Island. The first Island Company recorded as a corporation was Black Foxes, Limited, having a capitalization of \$20,000, organized in 1912. In all, ten companies were incorporated in that year, with a capitalization aggregating \$335,000. The very moderate capitalization is significant. It indicates that these first corporations were associations of men who desired to engage in fox breeding, not in selling securities; the promoter had not yet appeared. But the conditions were so inviting that the appearance of that functionary could not be long delayed. A limited supply of foxes, a constantly increasing number of those anxious to invest, a prosperous constituency who might become participants if properly appealed to, fat profits realized and rosy prospects for the future — all the conditions pointed the way to wealth. Secure control of a portion of the supply, capitalize the foxes at a figure materially in excess of their cost, make the proper appeal to the public, and fortunes were at one's command. This is exactly what began in the fall of 1912. Options, secured by a 10 per cent deposit, were

obtained on pups for delivery September 1, 1913, at prices, for best stock, ranging from \$10,000 to \$13,000 per pair. Companies were then organized capitalizing these foxes at from \$15,000 to \$30,000 per pair, a margin which insured a handsome profit to those promoters who were successful in marketing their securities before deliveries were called for. Practically the entire available supply of silver foxes in 1912-1913 was thus dealt with. But the spring of 1913 proved a disappointing one to the breeders, several litters of pups being lost. Many therefore were unable to fulfill their option requirements, with the result that prices rose sharply after May, reaching \$15,000 to \$17,000 per pair by September. Some notion of how widespread these highly speculative operations became may be gathered from the Provincial Secretary's Report of May, 1914, which records 196 incorporated companies engaged in fox ranching, with a total capitalization of \$24,305,700. Much the larger part of this stock was owned by the Islanders themselves. Considerable amounts were sold, however, in the other provinces of Canada, and in the New England States.

Next year (1913-14) these activities continued. Options were taken at about the same price as in the previous year, companies were organized capitalizing the foxes on about the same basis, and the marketing of securities proceeded apace with every prospect for another prosperous year for the promoters. But alas! this year it was they who were to suffer from the vagaries of the fickle goddess. When the war clouds broke, millions of dollars of securities were still in their hands, now practically unsaleable. With deliveries about due, those promoters who had not completed their organization were in serious difficulties. "Some purchasers of options were given an extension of time in

which to make their payments; in other cases the option money was applied toward payment for a less number of foxes than had been stipulated, and in other cases options were abandoned with forfeit of the money paid thereon."¹ Some companies never completed their organization. Others issued a limited amount of stock corresponding to the number of pups secured. For these reasons the actual amount of securities marketed was considerably less than was indicated in the report of the Provincial Secretary for May, 1915, according to which there were 275 corporations, capitalized at \$35,567,290, holding a provincial charter, and nine companies capitalized at \$4,240,000, incorporated elsewhere, engaged in the fox business within the province. In addition, fox exchanges, dealing in options on foxes and in shares of corporations, were organized in the larger towns of the province, and in several Canadian and American cities. Further indicative of how highly developed the speculative organization had become, was the appearance that year of a monthly journal, *The Silver Black Fox*, devoted to these operations.

The result of this interruption of speculative activity was a rapid decrease in demand for foxes, and a consequent sharp decline in prices, which fell off almost immediately to about \$5,000 per pair. The Fox Breeder's Association attempted to induce owners to retain all 1915 pups not saleable at this price, and thus prevent further decline, but their efforts were unsuccessful. By September, 1915, standard bred silver foxes could be purchased at from \$750 to \$1,500 per pair; just about the price paid for pelts in December. Since then prices have increased somewhat. "The last sales of live animals of good quality and pedigree have been

¹ Mr. McCready, in *The Silver Black Fox* for December, 1914.

made at more than double the price current in the month of September."¹

It is not to be inferred from what has been said that there was a general offering of foxes at the price just mentioned. Few were willing to sell, and few wanted to buy. The Islanders were just as loth to part with any quantity of their foxes at such a price as buyers were to purchase. Under pressure of necessity a few pairs were "sacrificed" to the highest bidders.

This pressure arose from the need of funds to pay current expenses. Owing to the practice, almost universal among the fox companies, of paying out all net income as dividends, no reserves were available to meet current requirements. To provide for these needs three methods were possible; to sell breeders at whatever they would bring, to place a few pelts on the market, or to levy on the shareholders. The first two methods were those generally employed. Resort to the method of assessment, the expedient followed by a few small companies, probably points to a desperate financial situation. It may be added, that in several of the more prosperous companies the directors personally advanced sufficient cash to tide over immediate requirements, expecting to be repaid from sales effected later.

The number of new companies organized since May, 1915, shows a decline corresponding to the limited dealing in foxes. Between May 15th and October 17th only five new corporations were formed and their aggregate authorized capital was only \$430,000. With the cessation of local operations a number of the biggest men in the business transferred the field of their activities to the United States and a number of companies were organized there in which these men were interested.

¹ The Silver Black Fox, January, 1916.

While Boston is the center of these operations, companies have been organized as far west as Minnesota, and as far south as Pennsylvania. These ventures, to the degree in which they are successful, present a profitable market for Prince Edward Island foxes, the result of which is reflected in the dividends declared by the few fortunate companies providing these foxes.

In addition to practically ending the practice of selling breeders for the time being at least, the war seriously affected the market for furs. The London market, the center of the world's trade in raw furs, was demoralized; the great German and Russian fur centers were almost entirely cut off; while in America there existed no distributive organization adequate to meet the emergency. This continent both furnished and consumed a large portion of the world's supply of furs, but in many cases the consumer was not reached directly through the mediation of the home dealers. Skilful dyeing and preparing had not been developed to the extent that it had in Europe, and there were no great centers where the world's buyers could congregate at public auction sales, and make their selection of the choicest offerings. The outcome of this situation was the inauguration of auction sales on this continent, in an attempt to wrest the marketing supremacy from London during the present crisis. The pioneer in this movement was the St. Louis fur house of Funstin Bros. & Co. Their first auction was held in October, 1915, and was under the patronage of the United States Government. Meanwhile the New York Fur Sales Corporation was organizing, and held auctions in January, 1916.

III

From this survey some conclusions may be drawn. First, fox farming in its industrial aspects, as distinct from its promotion or speculation, may be adjudged a permanent, legitimate activity. For more than twenty years these animals have been bred in captivity and never was certainty of success more evident than today. Nor can there be any question with regard to continuity of demand for the commodities produced. The demand is based not only on the serviceableness of furs in a cold climate, but on the exceptional beauty of the scarce silver fox fur and its satisfaction of the desire for distinction. One need not hesitate to class as permanent an industry which has demonstrated its success in catering to such basic wants.

In the second place it must be admitted that both the business organization of the industry and an increase in prices were normal developments. The application of the principle of business association to fox farming, both under the partnership and under the corporate forms of organization, was the work of those who wished to undertake ranching coöperatively, being unable or unwilling individually to advance the funds necessary for that purpose. Furthermore, their expectation was to make money solely by breeding and selling foxes, and their valuation of these animals was based on that expectation. Yet even under these conditions prices immediately departed from the pelt basis at which they started in 1910 and about doubled within two years.

But in the fall of 1912 the business methods employed took a turn which has been of far-reaching importance. This was the injection of new aims and methods into

the business by the promoter. This sort of "predatory" activity was not confined to the few outsiders by whom it was first introduced, but spread rapidly until it dominated the entire industry. With nearly every new organization, and with nearly every reorganization, the controlling purpose was to reap large profits from the sale of securities. A new turn was thereby given to the entire industry, which has called down upon it unsparing criticism, and has placed the corporations organized under its régime in a condition from which they will be extracted only with difficulty.

Before the promoter came, enough and more than enough funds were available for every legitimate requirement; and more than enough would have continued to come had the promoter never intervened. His activity was concerned solely with securing investments in fox companies and his aim was to secure a profit by capitalizing earning power and selling securities. There seems to have been in this case no performance of the services for which the economist is wont to justify the profit. Here the promoter was no pioneer in the productive process. He simply followed where others had led. His effort was directed towards creating and marketing speculative securities. It should be said, however, that many who were engaged in these operations were also active ranchers, indeed, some of the pioneers in the industry. So much the more is it to be regretted that their energy should have been diverted into illegitimate channels.

As noted above, prices showed a marked upward trend before the advent of the promoter. The fundamental forces bringing about this result were in part economic and in part psychological, and these forces continued to operate after the appearance of that functionary. His activities simply accentuated a natural tendency.

The economic appeal may be stated thus. Some years must elapse before there would be enough silver foxes to warrant slaughtering for pelts. Until that time arrived, the value of a pair of breeders would depend on the value of the pups produced, as breeders of more pups; and so on for many generations. In technical terminology, the utility of a pair of breeders was derived from the utility of the ultimate consumers' goods — the pelts produced by their progeny many generations hence. This was simply an indefinite projection of the then prevailing conditions, and the conclusion seemed almost self-evident.

It was further maintained that even after prices reached a pelt basis the value of a pair of foxes as breeders of fur bearers would be greater than the value of their coat of fur. This could be easily demonstrated mathematically. A fifty pair ranch, stocked with the best grade of foxes and skilfully managed, could be counted on to produce, on an average, at least one hundred pups yearly. Thus one hundred pelts could be marketed and the property maintained intact. At \$1000 per pelt — believed to be a moderate estimate in view of the 1910 sales — this would yield a return of 20 per cent on a capitalization of \$10,000 per pair. As the \$10,000 basis could easily be reached by retaining a portion of the increase for a few years, it would appear that, even after the period of unprecedented profits was passed, the fox industry would still be classed among the most lucrative fields of investment.

But eventually the price of pelts may decline; where then will the fox companies be? Still, it is said, in as strong a position as ever. By continuing the practice of retaining a portion of each year's increase, the capitalization can be indefinitely reduced and the ability to pay satisfactory dividends permanently maintained.

The plausibility of these arguments and their apparent verification by the prices realized from pelt sales, the upward trend of fur prices, the limited number of silver foxes in captivity, the prices at which breeders were selling and the enormous profits being realized, all tended to make them convincing even to the Island farmers of conservative temperament. Perhaps even more potent was the psychological factor. If the demand for capital by business leaders is frequently based more on pervading sentiment than on careful estimate, what might be expected in a quiet, rural community when neighbors, who a few years before possessed "only mortgaged farms and a few foxes," became numbered among the community's wealthiest citizens; when reports indicated that the profits divided among fox breeders in 1913 exceeded the entire cash investments on which dividends were due that year; when their own Commissioner of Agriculture estimated the value of silver foxes in captivity at the end of 1913 at "twice the value placed on all the cattle, horses, sheep, swine and poultry in the province as shown by the Canadian Census of 1911"? Nor were these mere paper calculations. The value was based on prices then current, and the dividends paid were for the most part real earnings. The record of one company will suffice to illustrate what remarkable profits were realized during this period. Early in 1911 this Company, then a partnership, purchased one pair of foxes for \$4,000. They calculated their entire capital investment at \$11,400. From the sale of the progeny of this one pair of foxes, not counting proceeds from sales of securities, they have met all current expenses, have provided for all ranch enlargements, have paid cash dividends during 1912, 1913, and 1914 aggregating \$133,000, and today (December 27, 1915) they possess

fifty-three silver foxes, all without one dollar additional capital investment. In 1913 alone the shareholders received seven times their initial outlay. Possibly this record cannot be duplicated, but it was approached by a number of companies. Cash dividends from 50 per cent to 500 per cent were not uncommon. The exuberant optimism engendered by such cases was as powerful an influence in determining demand as was a rational calculation of economic values.

Both the economic argument and the psychological appeal were employed by the so-called promoters with telling effect. Through an organized system of advertising and personal solicitation, thousands who otherwise would have been uninformed or uninterested were induced to become active participants in the industry. A large part of the investments in the industry since 1912, with the resulting proportional inflation of the rate of capitalization of corporations, must be attributed to their organized efforts. Had stock selling never become a motive leading to corporate organization, the course of events would probably have been much as it was prior to the fall of 1912. Individuals would have continued to purchase foxes, and new companies would have been formed, probably with an increasing preference for the corporate form of organization. Foxes would have been sold for breeding purposes only, at prices considerably in excess of their fur values. But the increase in demand would have been met by a yearly increase in supply considerable in amount. It may be doubted, therefore, if prices would ever have exceeded those obtained for the 1912 pups. Confirmation of this conclusion is found in the prices at which options were taken in 1913 and in 1914. These options, which ranged from \$10,000 to \$13,000 per pair, are perhaps a fair index of what prices would have been under normal

conditions. Indeed it may well be that the normal supply price would have been less than these option prices, since breeders doubtless anticipated to some degree the increased demand resulting from the speculative campaign. It is a fair inference, that, but for the promoters' efforts, the general range of prices during 1913 and 1914 would have been about \$8,000 to \$10,000 per pair. But those who purchased corporate securities during those boom years paid at the rate of about \$20,000 per pair.

The charge of direct fraud in connection with the organization of the corporations probably applies to a comparatively small number. Apart from the use of false and misleading statements, of which many instances may be found, the most conspicuous cases of fraud are where foxes of inferior quality have been dealt in without revealing this fact to the investors. In a few cases foxes of poor fecundity, and consequently of small value as breeders, have been sold by promoters to the companies they were organizing for a high price. Similar in nature and far more common were the instances where foxes caught in the wild, or the product of cross-breeding, were the property possessed by the corporations. Cross-breeding with red and cross foxes has been practised from the first. Experience has shown that "the silver color is Mendelian recessive to the red" and that "bastard" reds and cross foxes are hybrids. Altho no statistics are available, it is known that a considerable number of silver foxes have been thus produced, which naturally do not command as high a price as silvers which have been ranch bred for several generations. Probably a hundred or more of the wild animals have been imported to Prince Edward Island, purchased for a few hundred dollars each, and capitalized at \$10,000 or more per pair. In these animals the

silver color is not fixed; their progeny are as likely to be red as silver.

What has been said of the promoters — apart from the cases of fraud — is not necessarily a reflection on the character of the individuals engaged. Numbered among these were some of the leading business, professional and public men of the maritime provinces, prominent educators and religious leaders. Apart from the few cases of fraud, these men doubtless were sanguine and sincere, and considered they were engaged in legitimate business enterprise.

In conclusion a word may be said concerning the financial condition of the fox corporations. Judging from the history of their development one might expect to find them on the way to insolvency. They today have a paid-up stock issue of about \$20,000,000. The value of the securities is a derivative of the value of the consumer's goods — fox fur — ultimately yielded by the progeny of the 3600 silver foxes now owned. The present fur value of these foxes is about one-fifth to one-tenth of the paid-up capital, and pelt prices are certain to decline rapidly within the next ten years. Yet the most intelligent and conservative men in the industry believe that in the end unusually satisfactory returns will be received by present investors in those corporations which own standard-bred animals. The amazing thing is that there is a prospect for the fulfilment of this prophecy, providing steps are taken at once to develop an organization requisite to cope with the difficult and complex marketing problem with which they will be confronted in the immediate future. The situation is curious, and the present a critical time in the history of this unique industry.

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THE THEORY OF DIFFERENTIAL RATES

SUMMARY

I. Introductory. The economic foundation of differentiation, 682. — II. No natural tendency to uniformity in prices; uniformity sustained by the moral force of public opinion, 683. — III. The public the judge of homogeneity of goods or services, differences being the occasion for price differences; electrical examples, 686. — Homogeneity in relation to joint cost, 687. — Degrees of jointness; illustrations, 688. — IV. Joint-cost v. monopoly as the basis of differentiation, 690. — Differentiation might develop largely under competition, 691. — Danger of arguing from a single "cause," 693. — V. Wholesale discounts usually differential, and a differential element in retail price-fixing, 695. — VI. Deterioration and cost often in proportion to time rather than to use, 696. — Fixed-capital cost is of this nature, 698. — VII. Service the ultimate standard in judging differentiation, 699. — This principle opposed to rates lower than separable cost, as well as in favor of a differential treatment of general or joint-cost, 700. — Suggestiveness of electrical rates for impersonal methods, 701. — Public policy, 702.

I

THE present paper is a continuation of that published in the previous issue of this Journal on electrical rate theory and practice. But it directs attention to principles which are generally applicable, and which are of special interest in connection with electricity supply only because they are there applied under circumstances peculiarly favorable to clearness of development and explanation.

The economic foundation for differential rates is the desirability of more fully utilizing a fixed-capital investment through the granting of specially low rates to business that can only so be obtained. Fixed capital is

seldom or never utilized to its full capacity throughout a specified period, for example, a year. It should be noted that "full utilization," as the expression is here used, is a matter of economic technology rather than of finance. That the capital be utilized enough to earn a fair rate of return under existing conditions is not the point.

A railway line operating only three or four trains a day furnishes an illustration of one important kind of low degree of utilization. The electrical central station with a low load factor — indeed, with any sort of load factor actually experienced — affords another illustration of low degree of utilization, less generally appreciated, but even more forcibly appropriate. It is obvious that both these situations — and the load factor, moreover, usually acts in reinforcement of the density factor — stimulate the ambition of managers to get additional business, and they make profitable the concession of low rates, of course within limits, in order to get such business. In the case of the load-factor motive, however, not every sort of business will do. Moreover, the condition of the successful pursuit of a differential policy is that the higher rates from the older business, or the profits from that business, be not substantially impaired by the transfer of consumers from the old classes to the new class.

II

It seems to the writer that economists have tended to invert the natural order in assuming that the original or "normal" condition is one of uniformity of price for all the units of a homogeneous supply. It is generally assumed that uniformity of price — whatever that may mean — is natural and to be expected; and that, con-

sequently, the investigator's task is to explain why and how differentiation emerges. The writer does not think this is true. Among primitive peoples, price, to the stranger at least, is determined by individual bargaining without reference to any standard. Even among peoples living under the conditions of Western civilization, especially outside the cities, uniformity of price, if it prevails, is something to be maintained by watchful care, rather than something any departure from which calls for explanation.

The forces that maintain price uniformity, or a "one-price system," furthermore, seem to be primarily moral and only secondarily economic. Competition prevents the shopkeeper from taking all the profit he can wherever he can, chiefly because each consumer becomes indignant if he finds ground for suspecting that he is paying more than others. The dealer known to be "fair" will get the trade. If, or so far as, a dealer can obtain a monopoly, he is, it is true, to a degree emancipated from this restriction imposed by the moral sentiments of purchasers. But even the monopolist will try to conceal or palliate discrimination. On the other hand, if the public will accept some kinds of differentiation as fair and reasonable, the shopkeeper can practise these without the protection of a monopoly. The retail trader sells goods with the added convenience of city delivery for the same price as that at which he sells identical goods to be taken home by the purchaser. He is often ready to pay express charges on sizeable orders to be sent "within one hundred miles of New York." His cash and credit prices are the same. He holds "special sales" so far as he can do so without losing trade at the regular prices. Your corner grocer would in many cases be quite willing to charge a different price to each different customer for the same good if he could do

so without offending the community's sense of fairness. Not in all cases, of course, for in many other cases his own sense of what is fair and just would restrain him, apart from any pressure of public opinion. All this, it may be said, is because the consumer is willing to let retail trade be less analytically competitive than the purchasing dealer is disposed to allow wholesale trade to be. But this influence is still primarily the moral factor. Among dealers themselves, certainly the most commercially minded are not those least inclined to "shade" prices.

One of the first things a combination does is to cut down extended and easy credits; that is, it does away with one sort of differentiation. Book publishers coöperate to maintain uniformity of prices. The entrenched monopoly seems to be quite as willing to lump consumers as to classify them carefully, tho differentiation usually pays better, especially when the product is subject to competition from other kinds of business enterprises. But in this case, and to a less degree in others, doubtless economic factors are working in the same direction as the moral factors; notably, the cost to both dealer and consumer of making an individual bargain with each sale.

The scope of the public's demand that prices be fixed and uniform is, of course, limited by the perceptual discrimination of classes of goods as different from each other. But from an economic point of view it does not matter much just how the public draws the line between homogeneity and heterogeneity. Tho the public still needs educating as regards classification, certainly at present it is disposed to tolerate much price differentiation.

III

Regardless of whether moral public opinion or strictly economic factors are the more potent in bringing about uniformity of prices, it should be readily admitted that the only practicable way of determining what goods are homogeneous or what articles belong in the same class is to let the question be answered by the common sense of the public. Grounds for the acceptance of differences in prices may not appear in the material goods but in the supply of some associated service; on the other hand, the public may refuse to consider relevant differences in associated services, or in the goods or principal services, if the differences are small. In other words, two things belong for price-making purposes to different classes or to the same class according to what people in general think about it. If the public will accept a distinction between the carriage of cord wood and the carriage of coal a given number of ton-miles, the two services may be considered not homogeneous. Similarly the public may be willing to accept differentiation as between gas for fuel and gas for lighting, between kilowatt hours used for light and kilowatt hours used for power, between kilowatt hours sold to a church and kilowatt hours sold to a theatre, between a kilowatt hour that is one of ten supplied to one consumer in a month and a kilowatt hour that is one among ten thousand supplied to another, between kilowatt hours used for lighting before 6 P.M., and after 6 P.M. — or the public may not be willing to accept some of these distinctions. It is significant how well electrical supply puts to the test what sorts of goods and services one may consider homogeneous and what not.

In an important recent discussion of this subject the question as to what is to be considered joint cost, and

what not, has been made to hinge on the definition of homogeneity.¹ This seems to the writer insecure ground. At least one would expect the definition to hinge on economic effects rather than mere physical qualities. The economic distinction between product and by-product should consist not in the fact that they are two — twoness is a relative as well as a commonplace matter — but in the fact that contributions to the two supplies are closely bound together so that one supply cannot be increased in quantity without increasing the other at something like the same rate. Let the two supplies be distinguished any way you will. Absence of interchangeability or of the possibility of substituting one for the other seems to be the proper economic criterion. The form of the demand curve is significant, but hardly the decisive matter. If it were decisive, one might expect two articles absolutely alike to be sold to different individuals at different prices, for utilities differ even more than tastes, since circumstances, especially complementary relations, as well as natural and acquired desires and interests, affect utility.

Granted that the supplies are two, or that they cannot ordinarily be substituted for one another, degree of control possessed by the producer over the separate supply of each is the important fact. But a qualification is necessary to the extent that the exploitation of any by-product always involves some expense that would not otherwise be incurred, and this means that in no case is the supply of an economically serviceable article (an economic product) entirely unaffected by economic considerations or under entirely extraneous or non-economic control.

¹ Pigou and Taussig in the *Quarterly Journal of Economics*, vol. xvii, (1912-13) pp. 378, 535, 687.

From this point of view, joint production is a relative matter. It is only the extreme case of a situation that is common, and also important, even where the characteristic element in the situation would not in all degrees be understood as one of joint production and joint cost. When there is a physical facility available for economic exploitation but largely unused, of which the possible extent of utilization is indefinite, the situation is certainly worthy of attention, whether we call it a case of joint cost or not. Quantity of physical performance may be in some determinate proportion to the service of a related demand where the performance is not of the nature of an economic supply. This is the case with back-haul empty cars. There is no economic supply until some small use is made of the empty mileage. The utility resulting from the unintended part (economically speaking) of the whole performance may be nil, in which case there is a failure of economic service or production. Or the situation may be that of physically idle, as well as necessarily at the same time economically unutilized, capacity.

An electric generating plant must be constructed with reference to taking care of the peak of the load. Its capacity at any other time of the day and year is to a large extent unutilized. Some plants in small towns shut down during the daytime. If capacity formerly unutilized comes to be applied to drive motors for manufacturing purposes, are not the kilowatt hours so supplied to some extent joint products with the kilowatt hours sold for lighting purposes? If the intervals of small load can be further exploited, perhaps by the use of electric energy for refrigeration, does not the same question arise, to be answered in the same way? Yet carefully measured physical units of a given form of energy would seem to be about as homogeneous as anything can be.

A similar illustration is afforded by street railways. Transportation service offered may best be measured in terms of seat miles operated; and passenger service economically exploited or enjoyed may be measured in terms of passenger miles ridden. A street railway cannot possibly so arrange its schedule that these two match each other. Rush-hour back-haul seat miles are in effect a by-product. Of course, most such seat miles are no product at all in a strictly economic sense; they are an incidental waste of energy that might have been productive. But any attempt more fully to exploit such seat miles would naturally treat them as a by-product.

These cases are analogous to that of a steam railroad that more fully utilizes its roadbed by differentially low rates for certain kinds of freight. That there is no fixed ratio between the quantities of the various economic services obtained from a single instrument does not seem to be of decisive economic interest. Even where the by-product is a material good, it may have any degree of importance subordinate to that of the main product, and the quantity obtained will often be made to vary somewhat according to its importance. It may be commercially worth nothing and still be a true by-product. Some cotton seed was always required for planting, but most cotton seed long was mere waste. The by-products of coal-gas manufacture are more variable and more subject to control, but they are not therefore less truly by-products, than the cotton seed. Indeed, the gas is the by-product and the coke the main product where blast-furnaces demand the latter. The different conditions of course involve differences in the quality of both gas and coke; which fact does not involve any change in underlying economic principles. If a strict conception of jointness of supply makes it a physical rather than an economic matter, then the

economist is interested rather in the larger fact that some goods and services are available in quantities that do not vary directly in response to increase or decrease in the demand for them. Under these circumstances it would seem not to make much difference how we determine whether one or more separate products or services are being supplied. The working distinction is made by consumers in their views on discrimination.

To repeat, the economy of full utilization of product and capacity is the foundation of the significance of joint cost. Possibly, because of some restrictive formal definition that distracts attention from functional similarity, one may refuse to call all cases exhibiting the characteristic results of this situation cases of joint cost; but this seems to the writer unessential. The various cases belong functionally in the same general economic category.

IV

The question whether joint cost — which the preceding discussion may warrant us in taking in the broad sense as relating to the economy of full utilization — or monopoly power is the cause of price differentiation has been much debated.¹ There can be no doubt that a monopoly would be inclined to differentiate, and since by hypothesis it has the power to differentiate, monopoly power is doubtless a sufficient cause of differentiation; in other words, it may be the decisive circumstance or influence. As to the modes of differentiation, a monopoly will, doubtless, both on economic grounds and from the need of conciliating public opinion, follow practically the course dictated by considerations of joint

¹ J. M. Clark, in chap. 1, "Railways and the Law of Cost," of his *Standards of Reasonableness in Local Freight Discriminations* traces the development and interrelation of the two points of view, but without coming to any definite conclusion.

cost. There remains to decide the question whether joint cost could produce differentiation under competitive conditions.

Altho competitive enterprises are much hampered by lack of control of the situation, just as they would be in instituting any price policy, it seems to the writer that a considerable degree of differentiation might still be developed. A 30 per cent annual load factor for an electrical enterprise is good. Will a plant that does not try to utilize the other two-thirds of its capacity by low rates be stronger competitively than one that does? Will not competition tend to cause the development of a differential system under such circumstances? If, indeed, the original consumers will not consider other than a straight kilowatt-hour rate (a kind of influence already dealt with), and if they have a choice between different sources of supply, it will not. But in fact consumers do not object to a lowering of the rate per kilowatt hour as the average hours' use increases. It is true that the company will be in better position to push its enterprise by way of differential rates if it has a monopoly hold on the original business. But the possession of large fixed capital only partly utilized seems to be more fundamental.

The situation of a railroad transporting chiefly freight is somewhat different, because the supply does not have to be provided at the moment of demand. It is the necessity of producing at the moment of demand which makes the electrical rate question peculiarly interesting. But the carriage of a consignment of freight cannot be long postponed without the loss of the business. Even for the road with the densest traffic, taking the year as a whole, there is bound to be some falling short of complete utilization. The more important element in the situation, however, is the fact that railroad lines are

built long before they can be fully utilized. Hence if they can get low-grade freight by accepting less than the necessary general-average ton-mile rate, there will unquestionably be sound economic reasons for thus differentiating. Tho the increase of business will in time require double-tracking, the average fixed charges per ton-mile carried will be less on a double-track than on a single-track road, so that even the imminent necessity of providing additional facilities will not much qualify the desirability of increasing business by differentiation. The American public does not expect that, after due allowance for incidental differences in methods of handling, coal and manufactured products will be carried at the same (or equivalent) rate. It is feasible, as a matter of fact, to treat the ton-mile sold to the coal-mine operator, to the dry-goods jobber, and to the copper smelter as different "commodities." Likewise with the kilowatt hours sold for domestic lighting and for elevator service. If a specially low rate is necessary in order that a railroad or an electrical company get a particular class of business at all, not only will that class of shippers or consumers demand such a rate, so far as is consistent with the profits of the public-service corporation, but public opinion, at least that of the mercantile community, will support such a demand. The problem of obtaining a great volume and especially a great variety of business in order to meet heavy fixed charges is certainly not peculiar to monopolies and certainly has a formative influence on differential rates.

If we could find a branch of production requiring heavy investment in fixed and specialized capital where competition nevertheless ruled, and if we should find differentiation there practised in order to promote full utilization of plant, that situation would constitute the needed crucial instance. Ocean freight rates appear to

yield approximately such a case. Competition is keen and differentiation is practised, especially in relation to "berth cargo." The printing and publishing business affords another approximate case. If we consider the use of a set of book plates in printing to be a homogeneous service and one for which an equal charge for each copy impressed may be expected, then the sale of a \$1.50 and a fifty cent book printed from the same plates, and differing only in the quality of the paper and binding to the extent of a few cents, is a case of differentiation. Of course, for each single book copyright gives a monopoly; but for the supply of popular novels, or of serviceable school books, which are tolerably homogeneous as put out by various publishers, such differentiation is a competitive device. The devices by which different prices are paid for subscriptions to the same magazine constitute a similar example. The practice of charging less to new subscribers is well established and general.

One's attitude towards the debate on this question — whether fixed charges or monopoly cause differentiation — will naturally be influenced to a considerable extent by the degree to which one accepts or rejects a certain false premiss of much economic reasoning, to the effect that a given sort of economic phenomenon must be explicable by some single "cause." This is no place to argue the point at length; the writer can only state his opinion that any phenomenon is explicable only by a complex of many antecedents, conditions, circumstances, or "causes" — call them what you will — and that primacy among them is chiefly a matter of the various degrees of what "goes without saying," of what will be mentioned by one who is careful to be comprehensive, and of what calls for particular attention as the decisive factor under the circumstances assumed or described. To suppose that a specified sort of effect has

one and only one cause seems to be a sort of personification of events and objects — a survival of fetichism. To illustrate by reference to Marshall's analogy of the scissors, and to the controversy regarding the explanation of value to which this analogy relates, the writer believes it is correct to say that, where one blade is held in a vise, it is the moving blade that does the cutting, in the sense that its motion is the decisive factor and the rest is condition, circumstance, or what not. But it is equally possible that either one of the two blades may, in this sense, do the cutting; that is, that the decisive factor in the determination of value may be either on the side of supply or on that of demand. And it may be necessary to attend to both blades; their action will usually be neither entirely disparate nor of equal importance. Whether there is or is not a similar reciprocity of action between the two causes of differential rates, the illustration serves to emphasize the point that we need not regard monopoly power as the sufficient and only cause of differentiation, merely because by itself it may be made to provide a clear-cut explanation of the phenomena in question. Indeed, the joint-cost or full-utilization explanation goes to the economic foundations of the matter in a way to entitle it to a larger place than the monopoly explanation. Monopoly merely gives the economic and commercial motives of the dealer freer scope. What he will do if he has the power will be to fix prices in a way to utilize his fixed capital to the fullest, incidentally saving himself inconvenience by classifying his customers. Where he will charge high rates, and where low, is indicated by the joint-cost theory.

V

Altho wholesale discounts are not ordinarily brought under the theory of differential prices, the writer has so classed them.¹ The fundamental reason for a difference in price according to quantity purchased is of course of an entirely different nature. But once such a difference is accepted, its degree may be differential in motive and effect, just as differences of quality and kind are exploited differentially. It has been also pointed out by the writer that the competition of the isolated plant, affecting only large consumers, may be considered a justification for some degree of differentiation of the same nature. The cases are again mentioned here chiefly to illustrate the broad scope of the principle. This particular case of differentiation through wholesale prices also serves to illustrate the fact that differentiation is not absolutely conditioned by monopoly power.

The presence of a differential element in methods of retail price-fixing should also be noted in this connection. Retailers determine prices by adding to what was paid the manufacturer or wholesaler certain percentages *ad valorem* for handling the articles they sell. This procedure conforms to the principle of charging what the traffic will bear — since the purchaser of the more valuable article is charged more without specific reference to the character of the service performed — rather than to a policy of obtaining reimbursement for specific costs. The article that costs more at wholesale is not therefore of greater bulk or weight than the less costly article. Interest and insurance may add a trifle more to the basic original cost in the former than in the latter case. But such ascertainable differences seldom affect the percentages used.

¹ Cf. the article in the preceding (May) number of this Journal, p. 544.

VI

It has been argued that rates can be based on specific cost and in the long run should be; that all costs can be assigned to the products or services to which they are due on the basis of the proportionate use the products make of the means of production, and that, when this is done, there remains nothing to distribute differentially.¹ All costs certainly can be apportioned. But that fact of itself is no more significant than is the possibility of obtaining an arithmetical average of any fortuitous collection of numbers. It is also true that for most costs there is a fair and reasonable basis of apportionment. The exact whereabouts of the line of distinction between this problem and that of the disentanglement of separable costs — still by way of averages and for classes of commodities or services, not for individual consumers — may be difficult to determine.

Rails wear out, tho it may take twelve or fifteen years, and their cost can be pro-rated on the basis of the use made of them, just as the cost of a trainman's wages is pro-rated over the objective services to which he devotes his time. But the likeness of the two cases is not complete. That the rails will have to be replaced sometime is not the fundamental point, tho the brevity of the time during which a given kind of expense is effective — its rate of turnover, so to speak — is an important aid in the isolation of costs. The causal connection between use and cost is more likely to be close when the period of use is short, especially when there is but one use obtainable, as in the case of a processive good like fuel.² The

¹ This appears to be the dominant point of view of our public-utility commissions. But since the fundamental problem for a rate-regulating body is the separation and just apportionment of costs, it is hardly to be expected that such a body will attempt nicely to distinguish separation from apportionment, especially since the two shade into each other.

² That is, in order that the so-called "variable" costs conform to the assumption ordinarily made, they must be special in time as well as special in incidence.

crucial question, however, remains this: whether replacement becomes necessary after a given number of uses, and in proportion to use, or after a given period of time, with little or no reference to degree of utilization. If a locomotive's expectation of life in full service is determined by miles-run only and not by obsolescence and the like, then this element in cost per locomotive mile is determinate and separable; but if it is to be displaced at the end of ten or fifteen years whether it has run so many miles or twice as many, then average cost per mile is not something to build on, but merely a result of degree of utilization.¹ Deterioration of rails, for example, is not proportionate to use; still less is that of ties. In fact, depreciation in general is as likely to be due to rotting or rusting out as to "wearing" out. The cases where deterioration is more nearly in proportion to time than to wear and tear are numerous. Especially if obsolescence be taken into account, it is evident that the uses of fixed capital in general are, to a great extent, deciduous. If the fullest utilization is not made in season, certain potential uses are simply lost and the total cost has to be apportioned over fewer uses. Cost is, therefore, higher by reason of the failure of a fuller degree of utilization, such as might have been obtained, perhaps, by way of differentiation. Cost accountants are too likely to assume relations as fixed which may change as a result of prices based upon their cost analysis. Rates for electricity based upon load-factor considerations most forcibly illustrate the insecurity of

¹ M. O. Lorens in his article on "Constant and Variable Railroad Expenditures" in the *Quarterly Journal of Economics*, vol. xxi, p. 283, fails to see that these terms he employs as title do not sufficiently indicate the important distinction, which is between expenses that vary *with time* (or eternity), on the one hand, and those that vary *with amount of use*, on the other. Nor is it of great practical importance that, if a railroad could select from among the classes of business that come to it, after it has once become well established, it might be wise for it to take only the most profitable and not to expand — despite the importance of diversified loading and the applicability to this situation of the general principle of increasing returns.

amount of actual use of fixed capital as a basis of cost apportionment. Differential rates may lower cost. The unquestionably cost analysis is important for this, as for any sort of price policy, a differential policy cannot be purely a matter of cost accounting after the facts have occurred.

Fixed-capital costs in general are in proportion to time rather than to use; hence the unit cost per use unit depends upon whether the price policy of a company promotes full use. This holds of carrying charges in general — of interest, rentals, and necessary dividends unqualifiedly, and of maintenance so far as proportioned to time rather than to use. Obsolescence is particularly important in electrical industries. The importance of high degree of utilization as a reason for lower cost is clearer in the case of electricity supply than anywhere else because of the obvious special importance of the load factor as well as because of the importance of the more generally effective density factor.

A conspicuous instance of the fallacious assumption that apportionment according to some measure of use yields separated costs is afforded by the discussion of demand or capacity charges in connection with electrical rates. If we suppose that the peaks of all consumers coincide and directly constitute the station peak, the responsibility for the latter is quite definite. But in any actual case there is more or less diversity. Shall we discount each individual maximum demand in the ratio of the general diversity factor? Or shall we make the demand charge of each consumer proportionate only to his share in the station peak, that is, to his "simultaneous" demand? Shall we then exempt from any demand charge the consumer who requires no current at the time of the station peak? In that case, what if the load becomes smooth and nearly or practically con-

stant for four or five hours of heaviest loading? Is not the whole question really one of policy, and should not the apportionment vary according to the needs of the company in building up its load factor? Some small plants can better afford to shut down during the daytime than to run at all. Others may have a daylight load about equal to their evening load. Is there any "use" rule of apportionment that will cover both these extremes and the usual intermediate situation? Must not the company plan its rates with reference to the growth of business and adjust them accordingly from time to time, and is not this policy in contrast with, nay the opposite to, pro-rating costs and the procedure of most cost accountants?

VII

The reader will observe that in the present discussion no such fundamental opposition is found between prices based upon cost on the one hand, and differential prices on the other, as is ordinarily assumed. Differentiation is properly based on cost analysis, but a kind of cost analysis that takes account of expected results as well as of present conditions; not on mere cost accounting, which is a much more limited thing. If we wish to keep strictly to the cost-accounting point of view, there is a degree of opposition between the cost element and the differential element in price, the former being separable in fact and the latter merely apportionable according to some theoretical or arithmetical assumption. The writer can see little significance in the familiar, if not hackneyed, contrast between so-called "cost of service" and "value of service" theories. The latter seems to be a more plausible, only because rather high sounding, mode of stating the principle of "what the traffic will

bear." Cost, in the broad sense, should be of more decisive influence than value. The latter under a well-worked out differential theory operates only through the effects of price (value) upon cost. Cost is therefore the fundamental matter. But cost itself must be judged with reference to the volume of service that ought to result from cost. The strongest argument for differentiation rests on the general social ground that such a policy favors maximum service to the public.¹

what is to be the judge of this?

From this point of view, aggregate cost, including therein a fair return upon capital (plus a premium for efficiency or minus a fine for inefficiency), should doubtless fix the aggregate of prices, since the rendering of the maximum volume of service requires that rates be kept down. It supposes low average rates because the lowest rates will be given to the most elastic or expansive kinds of demand, which will therefore count for most in the weighted average charge and cost in question. But separable cost fixes the lower limit of any rate, for the obvious reason that an enterprise cannot prosper on out-of-pocket losses because there are "so many" of them. This statement is subject to qualification if there is a return to the community that the recipient of the direct service will not adequately recognize in the price he is willing to pay for it; but service of this sort cannot ordinarily be brought within the scope of the rule under discussion, or, when such a policy is indicated, the enterprise should be conducted by the government and not as an ordinary business affair. However, it is only separable cost that must or can have a direct causal connection with rates for specified goods or services, and a quantitatively definite effect upon them. The remainder of total costs are properly apportionable ac-

¹ That cost not normally resulting in service should have no direct share in price is properly a part of the same view. The service must be performed efficiently in order that the claim to the return of cost, including necessary profit, be justified.

according to general conditions and policies, so that the share allotted to a particular good or service is only in part due to its own characteristics. Doubtless all this is highly theoretical and will not by itself solve any concrete rate problem. But in matters of general policy — and differential rates come under this head — mistakes are due to a failure to develop clear ideas quite as often as to insufficient attention to the details of the concrete situation that confronts the practical man.

Electrical rates are of great importance in another respect: not only in the general way discussed in the foregoing pages, but also in the implied suggestions towards carrying out a differential policy impersonally. The principle of maximum service is too widely and variously indicated to be deemed a contribution from the consideration of electrical rates. But two-charge and three-charge rates — even tho these also are not quite peculiar to electricity supply — are distinctive and are characteristically suggestive. The superiority of such multiple-charge rates as a method of differentiation consists in the even and balanced impersonality with which the differential policy — so often under suspicion for unjust discrimination — can be applied through their use. A single charge, it is true, can be so graduated that its variations are continuous. But it takes account of variation in only one dimension. Two principles of variation may be recognized by way of two charges; or, what is more to the point, one charge may be made to vary with separable costs and the other according to differential principles. The electrical-rate demand charge is properly treated in the latter way. Both the kilowatt-hour charge and the consumer charge, on the other hand, reflect separable costs.¹ And there is

¹ The three-charge electrical rate is like what a railroad rate would be if it were composed of a terminal charge plus a mileage charge, and then plus something for the differential loading of fixed charges.

also need of differentiation according to the diversity factor. The desired impersonal quality *appears* to attach to mere quantity discounts; but these involve concessions to mere bargaining power — which is directly opposed to impersonal justice in rate-making — and they encourage an artificial adjustment of service conditions. Pure quantity discounts should therefore be scanned with suspicion. Density-factor discounts are not open to the same objection. The “increment-cost” analysis that is ordinarily adduced in favor of an extreme application of quantity discounts in individual cases cannot be expected to result in the establishment of general and permanent rates. Classification as a method of applying cost analysis, even tho the analysis be correct, is crude as compared with methods actually in use in electrical rate schedules — tho doubtless actual rates, even where there is back of them adequate analysis with reference to the different variables, will usually employ classification rather than multiple charges.

From the rendering of maximum service to the public as a guiding principle, there is an easy transition to the fixing of rates with more or less reference to general considerations of public policy. To a certain extent this would seem to be a legitimate expectation in the case of corporations performing services “affected with a public interest.” A private corporation, however, even a public-service corporation, cannot well carry the principle so far as a government enterprise may. For the former the rule nevertheless suggests itself: when in doubt, it is better to be public-spirited. Even tho business men will transcend ordinary business principles and habits only when the application of these familiar guides leaves them in doubt, the twilight zone between what is and what is not separable cost is so important

that the attitude suggested would be of considerable practical effect in rate-making. The rule of maximum service is itself a rule of public policy, and the policy of differentiation in general should be pursued in this spirit rather than in one of mere profit-making. The policy of differentiation is not necessarily a mere commercial device; it has broad and firm foundation in economic principles that relate to enduring social welfare.

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FIRE INSURANCE RATES: PROBLEMS OF COÖPERATION, CLASSIFICATION, REGULATION

SUMMARY

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ONE great problem with two phases has continuously engaged attention and challenged solution throughout the recent history of fire insurance in the United States. The essentials of the many unsettled controversies in this field of indemnity are never reached without a consideration of this paramount factor — rates and premiums. In all forms of property insurance equity of rates has attained preëminence as a desideratum, but owing to the magnitude of the business and the extreme difficulty of realization this is nowhere more clearly evidenced than in fire insurance. The technical difficulties

of estimating fire hazard, the diversity of risks, and the almost inevitable destruction of the evidence of the cause of loss have combined to complicate the solution.

The modern development of every business has given rise to a price-fixing system. This may be stimulated, modified and controlled by various factors such as competition, the principle of "what the traffic will bear," possibility of substitution, cost, monopoly value; but owing to the long-recognized mutual character of insurance — an institution where many combine to indemnify the unfortunate few — cost is admitted to be the basis of rates.¹ With this principle accepted, the only issue has been one of means — how should the cost principle be applied? This question has acquired two equally important aspects, namely, (1) by what agency shall rates be kept commensurate with costs? (2) by what theory or system can an equitable adjustment of premiums and losses be made? In other words, the first perplexity is one of agency, the second problem one of method.

THE MEDIUM

An appreciation of this aspect of the question requires a visualization of the stages of development of the rate-fixing process in fire insurance.² Comparatively early underwriters discriminated between buildings on the basis of their liability to destruction by fire, but the consequent classifications were naturally very crude. One grouping merely designated three classes as "common," "hazardous" and "extra-hazardous." Every

¹ See, e. g., Gephart, "Fire Insurance Rates and State Regulation," *Quarterly Journal of Economics*, May, 1914.

² For a history of fire insurance rate-making see A. F. Dean, "Classified Experience," Chicago, 1912 (pamphlet); G. T. Forbush, "Notes on Rates and Rate-making," a lecture before the Insurance Library Association of Boston, 1912.

company's rates suited its convenience; at first their adequacy was absolutely indeterminable until an account was drawn up of the business transacted, and those charging inadequate rates usually maintained a precarious existence until some conflagration terminated their activities. Property owners in vain sought the ideal combination of safety and cheapness. The early three-fold division was but the beginning of rating progress, however, and subsequent systems were modified by the personal judgment of inspectors. A judgment system of rating became prevalent which, while it distinguished between different features of hazard, had many defects. No two inspectors had the same judgment, no two made the same allowance for the same features, the insured could not beshown how his rate was arrived at, legislators could not be convinced of the honesty of the underwriters, and the companies themselves could not be sure that their guarantees were sold at the proper prices.¹ Therefore underwriters replaced individual judgment with combined judgment by establishing in conferences schedules of additions for defects and allowances for good features. Such schedules insured that all inspectors would consider the same features and would make the same deductions from and additions to the rate therefor.²

The maintenance of individual company corps of inspectors was expensive. Competition, also, developed into desperate rate wars. Coöperation between companies was practically non-existent and each enticed business by decreasing rates on the one hand and increasing commissions to agents on the other.³ This

¹ S. S. Huebner, *Property Insurance*, p. 187.

² For enumeration of advantages of schedule rating see *Standard Universal Schedule*, by F. C. Moore, *Continental Insurance Co.*, N. Y., 1902, p. 8.

³ F. C. Oviatt, "Historical Study of Fire Insurance in the United States" in *Annals of American Academy*, September, 1905.

increased expenses and decreased income so that the existence of all companies was jeopardized and many failed. For two reasons, therefore, a reform was necessary, and associations of companies and their agents were formed, now variously designated "underwriters' associations," "tariff associations," "boards," etc. Most of these bodies establish rates on risks situated within a given territory, a service which the National Board of Fire Underwriters at one time unsuccessfully attempted to accomplish for the entire country.¹ Sectional and local associations, however, struggled along until coöperative rating was attained.

These coöperative bodies at the present time may be divided into three classes,² (1) the very numerous local associations, which govern rates, commissions and brokerage charges;³ (2) the sectional bodies which restrict commissions and to some extent supervise rates;⁴ and (3) the national associations,⁵ which are now rather indirectly concerned with rates and whose principal services are educational and technical in character. If we omit the minor detail of extent of jurisdiction, we may make a two-fold classification of (1) educational and technical associations and (2) commission-regulating, rate-making bodies. With the former we are not here concerned. Among the latter were some composed of company representatives, some of special agents, some of local agents and brokers. All, however, constituted merely an effort to do coöperatively what had previously been accomplished individually. They were born of competition in the same sense that the rail-

¹ G. T. Forbush, "Notes on Rates and Rate-making," a lecture before the Insurance Library Association of Boston, 1912.

² See the author's *Fire Underwriters' Associations in the United States*, The Chronicle Co., N. Y., 1916, pp. 3-10.

³ *Ibid.*, pp. 10-17.

⁴ *Ibid.*, pp. 18-24.

⁵ *Ibid.*, pp. 24-30.

road traffic associations, the steel pools, the steamship pools, and farmers' coöperative elevators were brought into being by competition, which all were designed to restrict and limit.

Instead of thousands of inspectors individually acting as expert buyers for separate companies, hundreds were employed by these associations to make a common rate for all companies on each risk in a given territory. These rates were distributed to agents operating in the territory who were members of the association and nearly all companies charged identical rates. Stamping departments, through which all policies had to pass, were established to prevent secret price-cutting and promote standardization. Attention was also called to the commission evil; the leading principle of the Western Union, an association of company officials, was originally a flat 15 per cent commission.

These bodies were necessities of the times for the prevention of rate-cutting and excessive expense and the enforcement of coöperation. They had and still have certain very definite economic functions:¹ the promotion of economy, standardization, and miscellaneous services difficult to classify. Economy in rate-making was attained by the reduction of inspection labor and expense and by the attendant specialization and division of labor. Commissions were restricted through associations of company representatives and common surveillance of legislation cost less than individual. One legal corps could do the work for all companies. In the field of standardization the rating system was improved by the development of schedules, the establishment of organizations to apply the schedules, the elimination of rate-cutting, and some more or less unsuccessful attempts at classification of loss statistics. Short term

¹ Robert Riegel, *Fire Underwriters' Associations in the United States*, pp. 30-36.

rates were standardized as well as policy clauses and endorsements. Objectionable practices were eliminated by the prohibition of commission rebating and the expulsion of undesirable members. Mutual counsel and assistance of participants in the business and the prevention of and protection against fire were also important attainments.

Organizations of underwriters were formerly and are under the present system as much economic necessities as railroad traffic associations or steamship pools. They were necessary to terminate rate-wars and to insure against future endangering of company solvency by struggles for business at inadequate, profitless rates. Even the insured derived no benefit from these latter. In no business is a price reduction at the expense of quality an undiluted advantage and every inadequate insurance rate reduced the stability of the company and the value of its promise to pay indemnity. The small property owner, indeed, suffered a reduction in his prospective indemnity's quality without enjoying any corresponding cheapness of rate, for the large insurer, in an era of unstable rates, is always the one able to command the reductions. The history of the railroad business is a classic example of this fact. Competition in rates results in discrimination; the tariff associations were designed to promulgate and enforce uniform charges.

In spite of the legitimacy of the associations' objects, the advantages of which have long been recognized in foreign countries, abuses crept into the system, unrestrained by intelligent regulation.¹ The opponents of the system alleged and in some instances proved (1) an

¹ S. Deutschberger, Report on Examination of New York Fire Insurance Exchange, New York Insurance Dept., July 21, 1913; Robert Riegel, Fire Underwriters' Associations in the United States, pp. 36-52.

absence of classified statistics to support the rates made, (2) discrimination, and (3) arbitrary control of the licensing of brokers. A more detailed division of these complaints will indicate their significance.

It was contended that rates for various classes of risks should be based on the losses incurred on such classes and that it was insufficient rate justification for underwriters to exhibit their moderate underwriting profit on the business as a whole. Most mercantile and manufacturing risks are rated by schedules which start from a basis rate regarding which the questions were asked: "Why is one risk rated twenty times as much as another? Why is the basis rate on grain elevators \$1.50 and on iron foundries \$1.00, machine shop schedule \$1.25, tin can factory \$1.59, flour mill \$1.75?" It was desired that the companies produce figures showing premiums received and losses incurred on every class of business. Experts who made fire insurance rates admitted its impossibility; eminent makers of schedules contended that this was a hopeless and unprofitable task. The reply to the public's demands was that if exorbitant profits were not earned as a whole and if proper relations were maintained between all risks of the same class equity must result.¹ In fact, attempts to collect statistics from companies in the past had been practically failures; they refused to surrender the results of their writings, fearing that the data would be competitively used by rivals in the future. It was impossible, however, to convince the representatives of the people that rates could be justified in any manner other than by statistical representation of results, and the rate-making associations came to be considered as conspiracies to bind the public with arbitrary and

¹ For example see Gephart, "Fire Insurance Rates and State Regulation," *Quarterly Journal of Economics*, May, 1914.

unjust rates.¹ Further developments of this issue are fully discussed in the second portion of this article.

While the above complaint touched a fundamental aspect of fire insurance rating the question of discrimination was more easily grasped by the popular mind and assumed primary importance.² Discrimination took various forms; one was unequal treatment of classes of risks. The rate-making associations could not show reliable statistics as a basis for their charges on different kinds of properties, altho if the basis rate for any particular class is exorbitant every building within that class suffers an injustice, and an inadequate basis rate confers upon the class obtaining it a benefit at the expense of others. If statistics cannot be produced the complainant has as much proof of the inequity of rates as the defender has of their justice, that is to say, none at all. Furthermore, of all classes of risks, dwellings were with some cause considered the worst treated. These fall in a large class of properties which take "minimum" rates, *i. e.*, rates which apply to any and all risks (not rated specifically) of a class of the same general description as regards physical hazard. As in other cases, admittedly no sufficient proof could be produced to justify the charges made. These risks were even designated "preferred risks" because considered more profitable to the companies, each of which insisted that brokers furnish it with its due proportion of this class of business. Larger commissions were awarded the agent for these risks than for others and the more hazardous mercantile and manufacturing risks were not

¹ Report of Superintendent of Insurance of Missouri, 1912. Report of Superintendent of Insurance of Illinois on Fire Insurance Rates, 1915.

² A. F. Dean, *Fire Rating as a Science*, p. 7, "Our failure to make a profit does not concern the public, but our failure to maintain reasonably true rate relations offends the sense of relation which is instinctively the basis of every reasoning process. Even low rates that are inequitable are an offence to common intelligence."

acceptable unless accompanied by a large amount of the "preferred" business.¹ In some cases no codification of the rules for rating existed, which entailed the consequence that the clients of some brokers who through long experience or otherwise had acquired a considerable knowledge of the rules were favored, while other brokers could not secure equal treatment for their customers because of ignorance. Risks equipped with automatic sprinklers were not given the benefit of due reductions, and in one large city it was shown that their rates were not reduced until factory-mutual competition made this imperative, and then risks threatened with competition and already insured with mutual companies were first considered. A sprinkler schedule was promulgated, concededly devised to meet competition.¹

Discrimination between localities also manifested itself. No relation or harmony could be shown between the various local schedules used and different charges were made in different places for the same defect.² In two sections of the country schedules based on entirely different theories were in use; the Dean or Analytic Schedule in the middle West, and the Universal Mercantile Schedule in the East. In the larger cities of New England and the Middle States the latter was not even applied in its original form but was used with modifications. Even there it was limited to certain classes of risks. Considerable controversy arose over the question of whether urban fire protection facilities received due credit and whether city risks were correctly charged in comparison with suburban and rural risks. The report of the Illinois Commission to investigate fire insurance stated that "It is very hard to escape the conclusion

¹ Report of Superintendent of Insurance, Missouri, 1912; Examination of New York Fire Insurance Exchange, 1913; Report of New York Investigating Committee, 1911; Report of Illinois Fire Insurance Commission, 1911.

² A. F. Dean, *Fire Rating as a Science*, p. 53 et seq.

that owners of dwellings in Chicago are grossly overcharged." In this state at one time the rate on frame dwellings outside of Chicago was forty cents with no charge added for exposure, while dwellings in Chicago, with water supply and fire department, paid fifty cents and a charge for exposure in addition.¹ An aftermath of the San Francisco conflagration was a general rate advance to recoup the enormous losses incurred. In some localities, however, collection of the advanced rates for any length of time was impossible and the attempt was abandoned. The increased rates persisted in some cities, however, and were collected for several years after their removal elsewhere. In one city, tho the advance was officially abolished in 1910, the higher rates were still in force in 1913 on a number of classes not considered entitled to favorable consideration, altho no records existed to show why.²

Some discrimination existed between different kinds of policies. Certain classes of risks might be insured, for example, for five years at three times the annual rate; others could not. The existence of these "term rates" was justified by the saving in expense by writing insurance for a number of years at one time, the interest which could be earned on the larger premium collected immediately, the "tying up" of the business and the advantage of having on hand the larger premium, whether earned or not, in case of loss; but none of these considerations furnishes any basis for allowing term rates to some classes and denying them to others. The distinction was said to be made "without any definite guiding principle or standard."³

¹ Report of Illinois Fire Insurance Commission, January 4, 1911, p. 57.

² Report on Examination of New York Fire Insurance Exchange, New York Insurance Dept., 1913, pp. 7, 69.

³ Report of Illinois Fire Insurance Commission, January, 1911, p. 61. A. F. Dean, "Standardisation," 42d Annual Meeting, Fire Underwriters' Association of the Northwest, p. 94.

Finally, the most obnoxious form of discrimination, that between individuals, was complained of, altho no evidence was presented of its very extensive practice. Local agents representing many companies had some preferred risks and some which were undesirable at the price offered. The agent, however, mixed the good with the bad and offered them in bulk. The companies were compelled to take all or none of the risks, and through careful mixing and competition the agent usually succeeded in placing his risks. The existence of the preferred induced the acceptance of the hazardous risks at inadequate premiums. In addition large property-owning corporations sometimes succeeded in forcing the companies to reduce rates in order to obtain the considerable amount of business offered.¹

Another evil complained of was the arbitrary regulation of agents and brokers. So universal was membership in some associations that a brokers' success was dependent upon it. His application was passed upon by a committee appointed for the purpose, with the guidance of a set of rules. The rules, however, in some cases were merely perfunctory and deviations from them were common. Favoritism was practised (1) to serve the personal interests of one or more members, (2) by reason of the recommendation of some prominent company official, (3) because of the control of a large amount of business or (4) for political reasons.²

As a result of these palpable abuses of the system, the underwriters' associations came to be considered as wholly evil pools and combinations detrimental to

¹ L. W. Zartman, "Discrimination and Coöperation in Fire Insurance," *Yale Road* ings in Insurance, Chap. 11; Report of the Fire Insurance Investigating Committee of North Carolina, 1915, pp. 4, 8; Report of Illinois Fire Insurance Commission, 1911, pp. 21, 53; Report on Examination of New York Fire Insurance Exchange, 1913, p. 11; Report of New York Investigating Committee, 1911, pp. 63, 93.

² Report on Examination of New York Fire Insurance Exchange, 1913, pp. 11, 113, 114.

public welfare,¹ whereas they did have many legitimate economic functions. Even very early there had been some actions at common law² for their dissolution on the ground that they constituted a restraint of trade. But since the common law doctrine was that contracts in unreasonable restraint of trade were simply void and unenforceable, not giving rise to a criminal or civil action, no redress was available. In suits on the ground of public policy, proof was required that the restraint exercised was unreasonable and affected the public interest or was employed with respect to an article of necessity. In several cases it was held that insurance is affected with a public interest, but very generally it was not considered a necessity of life. The courts drew a distinction between the associations themselves and their acts and prevented certain acts while not holding the associations *per se* illegal.

In the general antipathy to "trusts" which arose, however, the fire underwriters' associations could not fail to be included. The old decision in *Paul v. Virginia* prevented the federal Sherman Act from being applied to such associations or boards and vested control of insurance in the several states; but many similar state acts were passed. Their usual wording prohibited contracts, agreements, etc., in restraint of "trade," "commerce," "business," "dealings in commodities," "products," etc., and when boards of underwriters were prosecuted under such acts the principal controversy was whether such general terms included insurance. The conclusion of the courts commonly was that they did not. In several cases insurance was held not

¹ For a history of the development of fire insurance regulation see Robert Riegel, "Commonwealth v. Cooperation," Rough Notes, April 22, 1915.

² For the status of underwriters' associations under the common law see the author's *Fire Underwriters' Associations in the United States*, pp. 52-59. Citations are there given of all the leading cases on this phase of regulation.

to be a "trade" or "commodity." It was held, however, to be a "business" and this word was afterward inserted in one statute for this reason. In summary, such acts were too general in wording to reach the business of insurance, and the ruling of *Paul v. Virginia* that insurance was not commerce here stood the companies in good stead.¹ It should be understood that all states did not progress with equal speed along the lines indicated and some were still attempting to regulate under the common law when others relied upon general anti-trust statutes. The latter still exist, of course, and are the basis for attempted regulation in some states today.

The inefficacy of the anti-trust statutes induced the passage of modifications which included a few more nouns such as "mechanism," "convenience," "repair," "product of mining," etc., to enlarge the laws' scope and specifically enumerated also "the price or premium to be paid for insuring property against loss or damage by fire." To distinguish these from the preceding type of legislation they may be called anti-compact laws. Inasmuch as the regulation of insurance rests entirely with the states, combinations of underwriters are proper subjects for the exercise of state powers. Such laws were held in *German Alliance Insurance Co. v. Hale*² to be a valid exercise of the police power; and the state may even expel a foreign company for participation in a pool or combination.³ It is doubtful whether as much may be said regarding agreements and combinations consummated and conducted outside the state.

In some cases the issue was introduced whether or not state and federal constitutional provisions protecting

¹ For the cases involving alleged violation of anti-trust statutes see *Fire Underwriters' Associations in the United States*, pp. 53-60.

² 21 S. C. 246 (1911).

³ See *Fire Underwriters' Associations in the United States*, pp. 53-60.

the right of contract and equal protection and due process of law were contravened by the anti-compact laws. In 1903 the Circuit Court favored an affirmative answer, but its opinion was three years later overruled by the Supreme Court and the constitutionality of the law in question affirmed. The penalizing of an insurance company for membership in a tariff association by requiring it to pay 125 per cent of any loss was by the same court held not to deprive the company of equal protection or due process of law. Equally valid is the deprivation by statute of a company of its contract right to require notice and proof of loss. No devices of the companies were of avail in evading such laws where it was desired to enforce them. Where in one state agents organized a "social club" to insure the writing of policies in accordance with understood standards the court characterized it as "a plain, palpable but bungling pool, trust, agreement, combination, confederation and understanding, organized to avoid said anti-trust statute," and illegal. The same opinion was held of a "stamping department" in Missouri. Only one unreversed state court decision was found which upheld the legality of associations under specific prohibitive laws as compared with the important opposite decisions of the highest courts.

The above-mentioned two classes of statutes were superseded in public interest, however, by the state-rating laws. Whereas the earlier enactments had decreed that competition in rates was a desirable status, thus officially countenancing discrimination, the new type of act required an identical charge by all companies but designated the state as the arbiter of insurance premiums. This was the first step, tho apparently a wholly unconscious one, toward a rational treatment of the issue.

Two varieties of such laws — one requiring the filing of rates, and the other providing for the revision of rates found by a hearing to be unfair — are largely important today only as documentary proof of state permission to determine rates coöperatively and as an acknowledgment that competition is undesirable. They exemplify a distinct departure from the former prevailing theory. The Kansas law providing for filing and revision was declared a valid exercise of the police power because "contracts of insurance . . . have greater public consequence than contracts between individuals to do or not to do a particular thing whose effect stops with the individuals."¹ An able dissenting opinion contended that the majority's decision opened the way to general state price-fixing. The third class of state-rating act provides for the original determination of obligatory rates by a state board. This class even more emphatically announces the death of the competitive rate system; all companies are by it bound to a uniform scale of charges.

Another legislative device is the regulatory statute. This leaves with the companies the fixing of rates by their time-tried system, but restricts and corrects its operation by public knowledge and supervision of associations' activities, provision for the hearing of present and elimination of future complaints and the prohibition of improper discriminating acts and arbitrary exercise of power.²

¹ *German Alliance Ins. Co. v. Lewis*, 34 Sup. Ct. 612.

² This type of legislation was recommended by the National Convention of Insurance Commissioners. Its principal features are the following: (1) The visitation and supervision of rating bureaus by the superintendent of insurance. (2) Prohibition of discrimination between risks of essentially the same hazard. (3) Requirement that every rating bureau grant membership to any insurer desiring same. (4) Requirement of a written survey of every risk specifically rated. (5) Regulation of agreements between insurers with reference to rate-making. (6) Review of rates and removal of discriminations by Insurance Commissioners.

The important conclusion to be drawn from the development of fire insurance underwriters' associations, their prohibition and regulation, is that the clean-cut issue always remains, "Shall rates be determined by competition or coöperation?" In the former attitude stand the states which enforce anti-combination laws and in support of the latter contention appear those which have passed state-rating and regulatory acts. With a general preponderance toward the latter type of legislation and more modern position, a further refinement of the question is possible. "Shall uniform rates be made through the medium of the state or of the associations?" On the one hand stand the state-rating acts, on the other the statutes which prescribe regulation. No compromise is possible in this question and the issue must ultimately be squarely decided before intelligent exercise of governmental power is possible in this field.

The argument for the state-rating acts is apparent. They are designed to end certain abuses and the necessity of this is not seriously contested. Enlargement of this theme is unnecessary. The other side of the question is less adequately recognized, involving as it does some knowledge of the insurance business. These associations were the outgrowth of economic necessity and continue to exist because of economic advantages. While the defects previously described are extensively advertised, few writers have troubled to indicate the advantageous features, which are of much greater importance. The state price-fixing theory would absolutely eliminate the association and its good points because of the abuses. But it is contended that state-rating acts are attended by their own evils.¹

¹ Report of New York Legislative Committee, February 1, 1911; *Fire Underwriters' Associations in the United States*, pp. 52-59.

The adverse criticisms of these acts, briefly stated, are as follows:

- (1) They interfere with freedom of contract with respect to a business of a private nature.
- (2) It is unfair for the state to limit premiums unless it guarantees the companies a fair profit.
- (3) It is unfair to tax the companies to support a rating system which may prove no more equitable than their present one.
- (4) Political influence may exert a power for the benefit of special classes.
- (5) Supervision of rates will devolve on those whose only qualification is participation in political activities.
- (6) Inequalities present in state and municipal taxation afford a presumption that the fire tax will be inequitably distributed.
- (7) Average and distribution are necessary to safe conduct of the business and no rates should be founded on a single state's experience.

The acts providing for regulation, however, do not introduce a new principle of government, capable of indefinite expansion, such as is inherent in the state price-fixing system; they merely endeavor to retain the good of the prevailing system and to reduce its evils. This is in entire accord with the attitude assumed toward railroads, steamship lines and public utilities, which are permitted to freely coöperate under supervision. The experience of New York seems to show that such laws operate effectively. Fire underwriters' associations have been investigated and various improper practices removed. More information is available to the public with regard to New York associations of underwriters than it is possible to obtain in all the other

states of the Union combined. Supervision has extended to liability and compensation insurance and even to the minor branches, such as plate glass and burglary protection. Because of reasonableness, practicability and effectiveness every indication is that future development will be toward legislation of this character.

THE METHOD

A brief recital of past efforts to measure fire hazard is necessary as a background for the discussion of the present problem.¹ The earliest insurance schemes of necessity considered all risks on an equal basis; even in 1666 there was only a two-fold division of property according to construction into brick and frame buildings. The early uniformity of treatment and simplicity of classification was primarily due to the fact that industry was largely in the handicraft stage. Steam and machinery hazards, difficult of analysis, were yet to come; the present-day variety of manufacturing and mercantile risks was lacking; business was principally conducted in small shops. The entire lack of analysis of fire hazard is demonstrated by the imposition of rates on the basis of rental values in 1681, and their determination by building valuation in 1690. Further division of risks developed gradually; in 1706 the Union Fire office of London classified them as "common," "hazardous" and "doubly hazardous" and in 1798 the Massachusetts Fire Insurance Company promulgated a six-fold classification depending on construction and the character of roof and walls. A special class was created for

¹ For a history of fire insurance rating see American School of Correspondence, *Cyclopedia of Fire Prevention and Insurance*; A. F. Dean, *Classified Experience*, Chicago, 1912; G. F. Forbush, "Notes on Rates and Rate-making," a lecture before Insurance Library Association of Boston. 1912.

buildings containing certain highly hazardous occupations. The New York Salamander Society, comprising eight companies in 1819 and twenty-six in 1826, put forward a classification of contents into "non-hazardous," "hazardous," "extra-hazardous" and "specially hazardous" and in 1820 a building classification comprising eight groups, as follows:

- (1) Buildings of brick or stone, covered with tile, slate or metal, doors and windows of solid iron.
- (2) Buildings of brick or stone, covered with tile, slate or metal.
- (3) Buildings of brick or stone with roofs three-fifths of tile, slate or metal and one-fifth shingles.
- (4) Buildings of brick or stone covered with wood.
- (5) Buildings of frame filled in with brick, front entirely of brick.
- (6) Frame buildings filled with brick.
- (7) Frame buildings, hollow walls, with brick front.
- (8) Buildings entirely of wood.

It is important to note that as yet there was no analysis of the elements of hazard; progress lay solely in the direction of more extended class subdivisions. Thus no more was charged for a brick building covered with metal occupied as a storehouse for baled cotton than for a similar building filled with chinaware. Exposure, the risk of fire from surroundings, was unnoticed until 1846, as far as can be ascertained. In brief, numerous features of individual risks were of minor consideration, while some one or two features which determined its class were paramount.

This condition could not endure when handicraft production gave way to the steam and machinery era,

which brought with it immense factories teeming with workmen, complex processes, varied construction and a confusion of materials. The formation of simple groups distinguished by a few prominent features became increasingly difficult and absurd. Either the classifications must be extended to a degree which then seemed exorbitant to underwriters, or some new system of determining rates devised. For a time individual judgment adapted the rates to existent conditions through the medium of inspectors. But the judgment of different inspectors would vary and no evidence of the justice of rates could ever be furnished to legislators or the public. Important factors in the estimation of some inspectors were insignificant to others; even the same inspector would not arrive at identical rates on the same risk at different times. It is a high tribute to those influential in establishing rates under this system that no widespread cry of corruption was ever heard.

The individual judgment system was superseded by a system based on combined judgment, a transition which was greatly facilitated by the associations heretofore described.¹ This system is now universally known as the "schedule" system, from its list of charges for elements of hazard and credits for elements of safety. Since no classified data of any practical value was available for the determination of the amounts of charges and credits, for particular features of construction, occupancy, and exposure, it was necessary to establish them by the experience and judgment of many able underwriters.² Schedules promulgated by the National

¹ C. A. Hexamer, "Rates and Schedule Rating," *Annals of American Academy*, September, 1905, p. 212. Report of Pennsylvania Legislative Commission, 1915, p. 26.

² The Universal Mercantile Schedule, by F. C. Moore, Continental Insurance Co., N. Y., 1902, p. 5. This contains a complete description of the Universal System. A more elementary and understandable description of its principles is given in S. Huebner's *Property Insurance*, chap. 17.

Board of Fire Underwriters were the earliest in use, but their "analysis was simple and the parts few." The first pretentious schedule of wide usage in the United States was the Universal Mercantile Schedule, still extensively used in modified form.¹

The Universal Mercantile Schedule starts from a basis rate of twenty-five cents per \$100 of insurance on a standard building in a standard city. If a given city is above the standard prescribed the basis rate will be lower than this; if below the standard, higher. Charges and credits having been given for the features of a particular city, the rate for a standard building in the given city or "key rate" remains, from which the rate for a given building in this city emanates. This is arrived at by a consideration of the construction, occupancy, and exposure of the given risk. Construction includes the features of walls, roof, floors, ceilings, area, height, elevators, stairways, skylights, cornices, lighting, heating, pillars and columns, chimneys, and the like. One thousand distinct classes of occupancy are listed, for which charges are assessed ranging from five cents on stocks of retail clothing, to \$6.00 for the manufacturing of fire works. Exposure is allowed for by considering the relation of the building under consideration to adjacent buildings.

The Universal Schedule was an attempt, it is evident, to substitute a consensus of opinion for individual estimates of the gravity of hazards. The necessity for this had become apparent. The chairman of the schedule committee as a test selected five experts on warehouse merchandise and obtained from each two ratings at an interval of three months on various classes. The same expert's two ratings differed sometimes by as much as \$1.00 per hundred dollars of insurance.² In the words

¹ See note 2, p. 722.

² The Universal Mercantile Schedule, p. 136.

of Mr. F. C. Moore, "In view of the fact that no one company, and certainly no one underwriter, can claim to have sufficient experience or knowledge for rating all classes of risks, it will not be denied that, in a business where an adequate price is so absolutely essential not merely to profit, but to solvency, rates should be fixed after a wide canvass to secure combined judgment."¹

It is also unfortunately true that no statistical proof of the correctness of the rate on a particular building was existent under such a system; some claimed such proof to be unobtainable. Fire insurance experts therefore developed the theory that it would be unnecessary to justify charges and credits for particular features if a schedule could be devised, all parts of which bore a correct relation to each other, and the aggregate result of which was merely a fair profit to the companies. This, in brief, is the germ of the Dean or Analytic System.² The followers of this later idea even held it to be a mistake to attempt to say that ten cents should be added, for example, for a party wall less than twelve inches thick; they would instead add and deduct throughout certain percentages of the basis rate. All measurements were to be purely relative, was the primary hypothesis, and afford nothing but ratios.³ These relations were considered the only permanent factors in the rating problem and the relations between components of hazard should always be expressed, therefore, in the form of a proportion. The first object in rating is to ascertain whether the charges for the components of hazard are in true relation. As stated by the author of the Analytic Schedule: "We might call the relation of

¹ Moore, F. C., *Universal Mercantile Schedule*, N. Y., 1902, p. 133.

² The best description of the Analytic System is found in H. M. Hess, *Philosophy and Operation of the Dean System*, the Author, St. Louis, Mo. See also E. R. Hardy, *Fire Insurance*, Modern Business Series, vol. viii, p. 148, Alexander Hamilton Institute.

³ Dean, A. F., *Fire Hazard; Is it Measurable?*, Committee on Publicity and Education, 171 La Salle St., Chicago, 1910.

each part of hazard to every other part a body of primary relations, of each risk to every other risk a body of secondary relations, and the relation of every property class to every other class a body of tertiary relations, but the primary relations really create the secondary and tertiary relations without any concern on our part."¹ As an illustration the following simplified figures² may be used:

Year A	On \$1000 of Insurance	Year B On \$1000 Insurance
Claims and expenses	\$9.50	\$12.00
Profit (assumed to be a fair profit) .....	.50	.50
Total	\$10.00	\$12.50

The correct rate would be per \$100 insurance:

Basis rate	\$.80	\$1.01
Construction, add 10 per cent of basis rate .....	.08	add .10
Occupancy, 10% of basis rate ...	.08	add .10
Exposure, add .....	.04	add .04
Total	\$1.00 ³	\$1.25 ⁴

Secondly, it was said, let us by experience adjust our basis rate to the point where a fair profit will be yielded. If aggregate results show only a fair profit and all related factors in the problem are correctly compared the charges and credits for each of the latter must necessarily be equitable. In brief, the underwriter was supposed to adjust his basis rate so as to collect an adequate and just amount from the policyholders.⁴ The words

¹ A. F. Dean, *Fire Insurance Classifications*, Committee on Publicity and Education, 171 La Salle St., Chicago, 1910.

² These figures are purely assumed. There is no assumption to be made, for instance, that construction and exposure are of equal weight.

³ Which is just sufficient to yield fifty cents profit.

⁴ H. M. Hess, *Philosophy and Operation of the Dean System*, the Author, St. Louis, Mo.

of an eminent pragmatist might be taken as clearly defining the intent of the Analytic System: "Our only test of probable truth is what works best, in the way of leading us, what fits every part of life best and combines with the collectivity of experience's demands, nothing being omitted."¹

The Analytic System was adopted in the Middle West, while the Universal continued to be applied in the East in modified form. The ever-present difficulty again presented itself, however, in connection with the former as with the latter — that the statistical proof necessary for public conviction of the correctness of the relations established between hazards could not be furnished. To quote its author, ". . . statistics can never give us the slightest clue as to the adequacy of these charges or credits. The causes of most fires cannot be ascertained. . . . An instant's thought will show that we are forever precluded from obtaining through classified statistics the contribution of such factors as area, height, wall thickness, floorway openings . . . or any other of the features of hazard enumerated in a modern tariff."²

Consequently, in 1914, at the insistent request of the insurance commissioners of various states the National Board of Fire Underwriters appointed a committee to consider the advisability of attempting a practical solution of the old classification problem. One result was the recommendation and acceptance of an occupancy hazard classification and a standard blank form for loss reports; another the establishment of a new National Board department, the Actuarial Bureau.³ The

¹ Quoted from *James's Pragmatism*, p. 80, by A. F. Dean, in *Fire Insurance Classifications*, p. 35.

² Dean, A. F., *Fire Hazard: Is it Measurable?*, p. 20; E. G. Richards, *Classification-Discrimination*, address before Insurance Society of New York, February 25, 1913.

³ Resolutions adopted by the National Board of Fire Underwriters at Special Meeting, October 29, 1914.

latter is now engaged in gathering statistics to be tabulated for the ascertainment of fire loss costs and in addition has the difficult duties of investigating the causes and prevention of fire, of keeping record of loss claimants and of furnishing data to states desiring it. Any company may become a subscriber to the Actuarial Bureau, which is supported by an assessment of 1/50 of one per cent of the members' gross premiums.¹

No less important was the indirect result that the preparation of the now complete "Experience Grading and Rating Schedule" began.² Unlike the schedules so far discussed this purposes a return to the classification theory as a basis for fire rates, and is the first designed to rest upon analyzed experience. It is adapted for use with the statistics now being prepared by the National Board Actuarial Bureau.

The E. G. R. schedule method is a gradual refinement of experience into smaller and smaller units, beginning with a division of the United States into state averages and ending with a grading of buildings or contents according to quality. Thus the ratio of losses, expenses and a fair profit³ to the insurance written over the entire United States is 1.125 per cent. Geographically dividing the United States similar average ratios are obtained for the several states,⁴ that of New York being, for example, .751 per cent⁵ and the rate for a particular

¹ Resolutions adopted by the National Board of Fire Underwriters at Special Meeting, October 29, 1914.

² E. G. Richards, *Experience Grading and Rating Schedule*, National Board of Fire Underwriters, New York, 1915.

³ Five per cent assumed a fair profit. Underwriting experience 1903-12 used to ascertain losses and expenses.

⁴ Losses were obtained from reports to the state authorities, expenses from the records of a few companies which have for years so segregated their expenses. Segregation is important because of the difference in state requirements, restrictions and taxation.

⁵ Unusual conflagration losses apportioned between all states. Thus California's average loss cost would be 2.327 if it bore the total conflagration loss itself but is figured as only .716 per cent after the San Francisco conflagration is apportioned among all states.

risk in New York state being 751/1125ths of the average United States' rate on the same kind of a risk. The average United States' rates on various hazards must be determined therefore.

The classification of fire hazard is into three divisions; inherent hazard, external exposure and internal exposure. The inherent hazard is dependent upon two factors, the nature of the building and the nature of its contents. Thus the inherent hazard of a building risk is determined from its own construction and the nature of its contents. The inherent hazard of a contents risk is found, likewise, from its own nature and the character of the building in which it is situated. But damage by fire may originate from two other sources, namely, from other occupancies in the same building and from other buildings nearby. The hazard of loss which buildings or their contents are liable to sustain from surrounding hazards outside of the exposed buildings is designated the "external exposure" and the risk of fire from tenant occupancy in the same building as the exposed risk is called "internal exposure." In arriving at a rate on a risk the cost of inherent hazard, of external exposure and internal exposure are separately calculated. Combined they give the fire cost of inherent hazard, external and internal exposure, on a given risk, not considering expense.

With the statistics now being prepared by the National Board Actuarial Bureau available, all towns will be divided into ten classes according to public fire protection. The losses and writings are to be divided according to the grade of town and then to be sub-classified according to inherent hazard into four hundred and thirty classes, each of these being sub-divided into (1) building risks and (2) contents risks. The National Board has prepared a table for the classification of risks

in this manner, building risks being designated by odd numbers and contents risks by even numbers, as for example: No. 137, a *building* containing wholesale groceries and No. 138, *wholesale groceries* contained in a building.¹

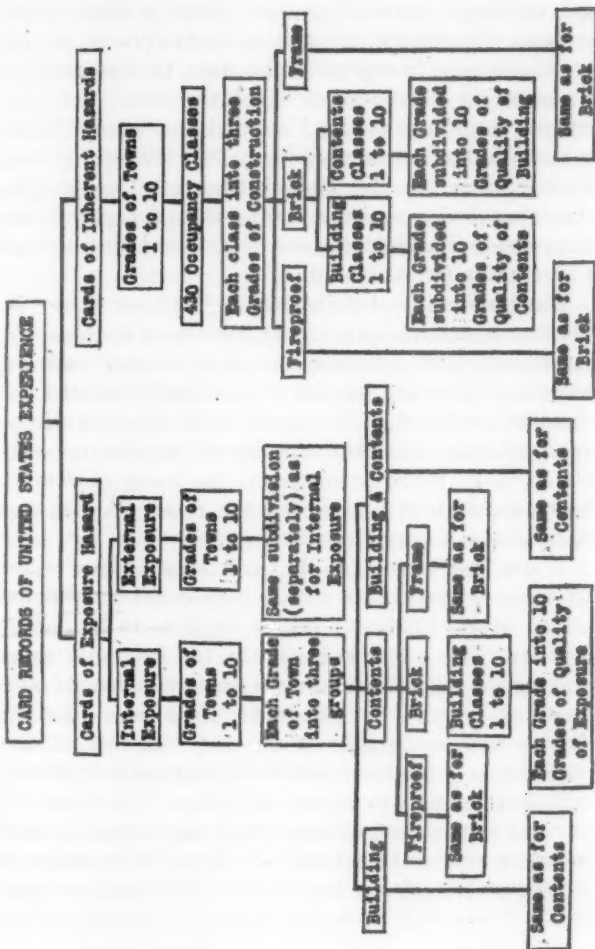
Both building risks and contents risks are then divided into three sub-groups, according to whether the hazard be a fireproof, brick or frame building, and each of these three types reclassified as of ten grades of quality. We have, therefore, thirty quality grades of building risks and thirty quality grades of contents risks. Each of these thirty grades must now be sub-divided, the building risk grades each into ten grades according to quality of contents and the contents risk grades each into ten grades according to quality of building. The inherent hazard on any risk, in short, is to be determined by two factors, the type and quality of construction and the nature and quality of the occupancy.

All losses resulting from external exposure are now to be considered in connection with all grades of external exposure, and a similar refinement of experience made, with one exception — the sub-division into occupancy classes is unnecessary. Internal exposure is treated in the same manner.² The sum of the costs of inherent hazard, external exposure and internal exposure gives the insurance cost of the risk in question. To this must be added expense and profit. The following is an outline of the proposed division and sub-division of tabulated experience.

This system is the first which attempts the measurement of fire hazard by actual tabulated experience. It will be noted that it avoids the use of any state averages,

¹ Standard Classification of the National Board, which has been endorsed by the National Convention of Insurance Commissioners.

² E. G. Richards, *Experience Grading and Rating Schedule*, pp. 38, 39.



since distribution is an essential principle of insurance and no single state's experience gives a dependable average. To adjust a rate as found by the process above to a risk located in any particular state, that proportion of the rate would be taken which the state's loss and expense ratio bore to the United States ratio. Thus in New York all risks would pay $751/1125$ ths¹ of the average rate for the United States. This simple averaging device removes one of the principal objections directed against the use of classified statistics as a foundation for rate-building.

The question to be decided in the near future is whether premiums upon a judgment basis modified by experience shall continue or rates become mirrors reflecting the exact picture of the results painted by classified statistics. The answer will depend entirely upon whether the National Board tabulations and the E. G. R. Schedule surmount the many objections which have always prevented the re-adoption of the classification theory by underwriters.

It has been contended that true classification is the grouping of phenomena similar in essential respects, or rather whose differences are so small as to be imperceptible. In a classification for fire insurance rate-making the essential factor is quantity of hazard and groupings should be dependent upon this. But so diverse and multitudinous are the elements of fire hazard that it has been considered impossible to obtain sufficient like risks to form a valid class. The hazard of one risk is composed of many important factors absent in others and the better risk will demur when common experience is made the basis for determining an average rate.² Those who have most adequately presented this

¹ See p. 728, above.

² A. F. Dean, *Fire Insurance Classifications*, p. 10; A. F. Dean, *Classified Experience*, p. 33.

consideration, however, admit that all classification must end somewhere, that ultimately an arbitrary limit must be put to sub-division. While a classification of many risks as "dry goods" occupancies is incomplete and invalid in practice, when the E. G. R. Schedule sub-divides classes into ten grades of quality it may be reasonably doubted whether this is not a sufficient extension of analysis. In life insurance, for instance, it is found sufficient to divide risks into normal and impaired without comparing hearts, lungs and stomachs in various degrees of health. A reasonably correct rate arrived at in this manner is certainly preferable to a "scientifically" computed rate of whose correctness no proof can be adduced, from the standpoint of the public. Furthermore, the analysis and sub-grouping of risks is only limited by the necessity of retaining distribution and if desirable, twenty grades of quality may be standardized.

Another long-standing problem of classification has been the difficulty of providing for "omnibus buildings" comprising many occupancies and conglomerate hazards.¹ It has been difficult to devise any method of determining the appropriate group in which to place such risks. The E. G. R. Schedule, however, treats each occupancy of a building as an inherent exposure of every other in the same building. The statistics of writings showing internal exposure gradings would be sorted from the aggregate statistics and compared with losses from internal exposure. After a sub-division into final units of hazard the loss-costs of each group would be determined.² The similar claim that it would be impossible to satisfactorily group many risks which would accordingly fall into a nondescript "miscellaneous"

¹ A. F. Dean, *Classified Experience*, pp. 14, 15.

² E. G. Richards, *Experience Grading and Rating Schedule*, p. 39.

class¹ could seemingly be easily overcome by simply not falling into the error indicated and never creating a miscellaneous group, or rigidly restricting it.

Two other objections put forward by opponents of classification purely refer to methods of administration. One was that all previous figures were collected by many companies, each with its own individual definitions of various classes and that the aggregates of such groups were meaningless.² It will be noted, however, that the proposed system does not intend to make use of old figures but is to rest on the statistics being centrally collected by the National Board.³ Secondly, the danger of risks being erroneously classified is deplored.⁴ This is simply a practical difficulty to be surmounted by appropriate methods of checking.

Classification lists formerly existed for the purpose of comparing premium income and losses to arrive at profits or losses on specific classes. It is represented that not only losses but rates vary, that both losses and premiums are inconstant. With two independent variables differences in results are attributable to either and conclusions are often fallacious.⁵ The proposed system proposes no comparison of losses and income. It is designed that a ratio of losses and amount of insurance written be adopted as a basis. Thus the difficulty stated is not applicable to this system.

A more fundamental consideration is that in most businesses, while a one-price system is attempted, no endeavor to extract a uniform profit on all classes of goods is made. It is said that the latter is just as imprac-

¹ A. F. Dean, *Fire Insurance Classifications*, p. 13.

² *Ibid.*, p. 18, and E. G. Richards' *Classification-Discrimination*, p. 13.

³ Mr. E. G. Richards clearly demonstrated in 1913, by actual illustrations the inefficiency of prevalent classifications as bases for rates. See *Classification-Discrimination*, p. 15 et seq.

⁴ A. F. Dean, *Fire Insurance Classifications*, pp. 18, 19.

⁵ *Ibid.*, p. 19.

licable and unnecessary in fire insurance.¹ This argument ignores the fundamental nature of fire insurance, which is mutuality and public service. Most businesses are considered of a private nature, conducted solely to produce the greatest possible profits for the promoters. These are not supposed to base prices on cost nor to make a uniform profit. But the principle that the price of fire insurance, practically a public necessity, should be based on cost, has of late years seldom been denied. A cost-basis of price-fixing involves uniform profits when carried to its logical conclusion.

Finally, an eminent underwriter in 1910² asked three important questions of the advocates of experience rating. (1) What would you do in regard to the states with valued policy or anti-co-insurance laws? In reply to this it may be stated that the valued policy law, providing that the face of the policy is to be paid in case of total loss, irrespective of present value, is an outgrowth of hostility toward insurance companies who could not justify some of their practices, and must ultimately disappear. The co-insurance principle, that losses should be paid in the proportion that the insurance carried bears to the insurance required, would not be of importance, as far as rate-making is concerned, under the proposed system, because rates would be based upon the ratio of losses and expenses to insurance carried. In states where co-insurance was prohibited this ratio would be greater and charges correspondingly increased. (2) What would you do with a large city conflagration in any single state? This is cared for by taking conflagration losses out of any single state's average and apportioning them among all states.³

¹ A. F. Dean, *Fire Insurance Classifications*, p. 23; *Classified Experience*, p. 35 et seq.

² *Ibid.*, p. 38.

³ See p. 728, above.

(3) What would you do in states where the laws forbid the common use of any tariff? This status must have had a cause; the early portion of this paper showed this cause to have been dissatisfaction with company rate-making. The new schedule is designed to remove this dissatisfaction and with it will disappear the opposition to uniform rates coöperatively made.

In brief the E. G. R. Schedule is based upon a theory of measurement of hazard by statistical results while the Analytic and Universal Mercantile systems were elaborate and carefully designed applications of the combined judgment theory. The former is inevitably superior to the latter two if capable of overcoming certain technical difficulties. It maintains the principle of average and distribution, a necessity in fire insurance deemed impossible under the classification method and yet embodies the idea of statistical justification of rates.

CONCLUSION

It is apparent from the preceding that the present system of rate-making in fire insurance was evolved by the development of early crude methods, and that economic conditions compelled the establishment of coöperative associations. Regardless of their functions criticism and distrust were aroused by the unwise exercise of power. After numerous foolish and dangerous attempts to regulate the tariff associations, the regulatory statute and the state-rating act appeared as proposed solutions of the problem of establishing a medium for promulgating fire rates. The prominence of these enactments at the present time and their tendency to supersede other legislation force the choice of rating by state-supervised underwriters' associations or bureaus or through the medium of state officials.

The growth of popularity of the former method is shown by its adoption in six states prior to 1915 and in six more during the past year.¹ Which method will finally be universally adopted yet remains to be decided.

It has also been shown that rating theories developed from classification to individual judgment and thence to combined judgment. The combined judgment theory reached its final stage in the Universal Mercantile and Analytic Schedules or modifications of them but it was evident that dissatisfaction must co-exist with any rate-making system which could not be justified by statistics. Underwriters were compelled to attempt a schedule dependent on tabulated experience and the E. G. R. System seems to be a reasonably successful attempt to embody this principle. In the field of rating theory the important question is "Will the companies endeavor to continue past methods of measuring hazard or will they coöperate in the support of a new system intended to furnish the public with the proof of equitableness which it demands?" Every indication is that the latter is one of the great imminent developments of fire insurance.

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¹ The states which passed laws prior to January 1, 1915, giving the insurance departments power to examine and supervise rating bureaus and associations, were New York, New Jersey, West Virginia, Washington, Kentucky and North Carolina. Subsequent to this date such acts were passed in Pennsylvania, Michigan, Minnesota, Iowa, Missouri and Oklahoma.

CHINESE FINANCE UNDER THE REPUBLIC

SUMMARY

Introduction, 738. — I. Foreign loans to China, 740. — The international "money trust" described, 741. — Effect on interests of borrowers and lenders, 747. — Breakdown under pressure of competition, 749. — Critical comparison of the Taft and Wilson policies, 758. — II. Internal development of Chinese finance since the Revolution. The escape from bankruptcy, 1912-14, 762. — Political basis of the Chinese financial system, 765. — Influences tending toward improvement, 766. — The political and fiscal reorganization, 767. — First loans from Chinese lenders, 768. — Reform of salt administration, 771. — Fiscal economy, 774. — Political changes underlying these reforms, 775. — Summary of conclusions, 1912-16, 777.

THE recent course of events both within China and without has given to that nation an altogether new financial status. Unless her present good fortune is in some way reversed we may reasonably assume that she is henceforth measurably safe from her deepest humiliation and her most deadly peril — an ever recurring deficit. It has been possible by a rather too cheerful interpretation of figures to regard the national treasury as solvent even in the troubled year 1914. The best available information indicated for the latter half of 1915 an excess of income which, tho slight, gave promise of revenue sufficient in the near future for long deferred projects of reform at home and defense abroad.

It is not the least result of this recent fiscal improvement that China is thereby unmistakably advancing toward liberation from need of foreign aid and foreign control in matters of finance. Foreign influences have constituted the dynamic factor in China's national life

through some decades. Her financial difficulties have arisen from the burden of indemnities exacted by foreigners and from increase of expenditures incurred to gain the power of defense against foreign encroachment. The manifestations of unrest again — the Boxer movement and the Revolution — have resulted largely from this financial distress and from indignation toward its foreign authors. Foreign lenders have controlled, for their own advantage, the direction of industrial investment in China, especially where railways should be built and how. They have shaped the constitutional growth of China; by preferring to deal with one central authority they have lessened the relative importance of the provinces; by withholding aid to the Manchu government they permitted it to fall. In unison with Chinese capitalists, they aided President Yuan against the uprising of 1913, and the rebellion failed. The increased burden of foreign debt has even threatened to result in bankruptcy and the control of China by foreign governments acting for their citizens. From this perilous dependence the financial history of the last years has given hope of relief, so that the nation may proceed on a course prescribed by her needs and realizing fully whatever may be her own power to advance.¹

¹ Bibliographical note: The British and American official publications are the chief sources of information on those matters of discussion which have been subjects of diplomacy. The Chinese government is too poor, perhaps still too secretive, to make regular and full publication of statistics. Aside from reports of the Maritime Customs, very few volumes of official reports have appeared. But Chinese officials, realizing their dependence on public sentiment, frequently issue statements through the public press at their own initiative or in answer to inquiries. These, like the statements "given out" by higher officials in America, are proper material for the student, if employed with due caution. The periodicals cited below make use of these statements at first hand or in translations from the native press.

An American monthly in Shanghai, the *Far Eastern Review*, publishes articles on trade, engineering, and finance, which are conscientiously prepared and have especial value on account of their abundance of detail and their publication in full of valuable documents, such as government reports and copies of contracts. *Der Ostasiatischer Lloyd*, also of Shanghai, is the chief organ of the German interests in the Far East. As the work of trained scholars it deserves to rank with the better class of European or American journals devoted to commerce and finance. The *North China Herald* (a

I

FOREIGN LOANS AND THE FAILURE OF
FOREIGN CONTROL OVER CHINESE FINANCE

Bankers and statesmen have built up in China a system of monopolies consisting of combinations within the several lending nations, with a further amalgamation of these national combinations into an international "money trust." It is not easy to recall an equally extensive attempt at restraining competition, enforced by so mighty a union of political and financial power. Yet at most points it has failed, for the reasons which have brought to ruin so many efforts at restraining competition by agreement. The Chinese nation granted, in loan contracts and railway concessions, terms which freedom of contract would not have permitted, which either in rates of interest or prices of bonds, or some bonus or other advantage, gave to the lenders excessive compensation for the use of their capital. On the other hand, lenders eager to invest in China on more liberal terms were made to withhold their competition. But, as we shall attempt to make plain, the forces of competition proved too strong and broke through even the powerful restraints imposed by most of the chief governments and many of the chief banking houses of the world.

weekly issue of the North China Daily News) is a newspaper of good repute. The China Yearbook is an excellent statistical compilation, in plan like the Statesman's Manual; it has unfortunately been discontinued. I have relied at times upon the excellent Peking correspondents of European journals like the London Times and the Frankfurter Zeitung, and have referred to two or three secondary sources — Edouard Laboulaye's *Chemins de Fer de Chine* and P. H. Kent's *Railway Enterprise in China*. Laboulaye, as a representative, I believe, of the French capitalists in the Orient speaks with the advantage of first-hand knowledge. Kent has long been a resident of China. Both books include numerous copies of contracts and treaties. The student of this subject should not omit *Railway Problems in China* by M. C. Hsu, published by Columbia University with bibliographies. For a general description of taxation in China, see an article by Mr. E. T. Williams in this Journal, May, 1912.

To come to particulars:

I. In some instances a monopoly of certain loans has been extorted by military force with no real pretense of voluntary consent by the Chinese.¹

II. Within each lending nation certain groups of bankers have undertaken, with more or less support from their governments, to maintain a monopoly of lending from their own country to China.²

¹ The agreement between Germany and China, March 6, 1898, granted Germany the right to build two lines of railway in Shantung, "and if at any time the Chinese should form schemes for the development of Shantung, for the execution of which it is necessary to obtain foreign capital, the Chinese government or whatever Chinese shall be interested in such schemes, shall in the first instance apply to German capitalists. Application shall be made to German manufacturers for the necessary machinery and materials before the manufacturers of any other power shall be approached. Should German capitalists or manufacturers decline to take up the business, then China shall be free to obtain money and materials from sources of other nationalities than German."

By the convention between Japan and China, April 18, 1907, it is agreed that one-half of the capital needed for rebuilding the Hain Min Tun Mukden railway, east of the Liao river, shall be borrowed from the (Japanese) South Manchurian Railway. The Chinese government being about to construct a railway line from Kirin to Kuan cheng tse agrees to borrow from the aforesaid company one-half of the capital needed for the work. . . . If the Kirin Kuan cheng tse line should hereafter build branch lines or an extension "and "if there should be lack of capital, application should be made to the Southern Manchurian Railway Company for an arrangement. During the period of these loans, the Engineer in Chief shall be a Japanese. The Engineer in Chief shall be changed only on consultation with the South Manchurian Railway. There shall be a Japanese accountant supervising the receipts and expenditures, but in this consulting and acting with the [Chinese] director general. All earnings must be deposited in Japanese banks." In this case loans were to Japan only a means of subjection, as Japan was at the time in desperate need of capital and was a frequent borrower from Europe.

For other instances of loan agreements extorted by threats, see pp. 745-6, below.

² The British Government has given support to the Hong Kong and Shanghai Banking Corporation, and to the British and Chinese Corporation, which was formed in 1898 by the banking house just mentioned and the old trading company of Jardine Matheson and Company, and which has financed and built most of the railways constructed in China with British capital.

The German syndicate includes most of the great German banks under the name of the Deutsch-Asiatische Bank, formed February 12, 1889. Its business was limited to Asia without a right to deal in merchandise. In its organization it is in certain respects dependent upon the state, the president of the directors being elected by the directors but subject to imperial ratification. (Vallier, *Banques d'Exportation* 103.)

The French Banque de l'Indo-Chine is a private bank with special privileges from the state, established by decree of January 21, 1875, and regulated by various subsequent decrees. (Soltan, *Französische Kolonialbanken*, p. 102.) With it have been associated in China the *Crédit Lyonnais*, the *Comptoir National d'Escompte de Paris* and six other houses. (China Yearbook, 1913, p. 365.)

The American group included four New York banks; Morgan and Company; Kuhn, Loeb and Company; the First National Bank; and National City.

Japan has been represented by the Yokohama Specie Bank.

III. Foreign engineers, employed in the construction of Chinese railways on the ground of superior training, experience, and honesty, and acting as purchasing agents, have in many instances given a monopoly of this business to their own countrymen or certain favored compatriots, even in violation of agreements to purchase competitively.¹

IV. Competition has been restrained by a network of international agreements, chiefly the following:

(1) In 1898, at a meeting in London, the German bankers agreed to refrain from competing with the British in the whole Yangtse Basin, the provinces south of the Yangtse and Shansi, receiving in return a similar promise as to their pretensions in Shantung and the Yellow River Basin. The railway from Tientsin to the Yangtse was to be built jointly.²

(2) In 1898 also, the British and Chinese Corporation and an American Company having no exclusive government support, the American Chinese Development Company, made an agreement that each party should offer to the other a participation of one-half of its own interest in any business hereafter obtained by it in China, including the existing preliminary contracts of the American Company for the Hankow Canton line and of Jardine Matheson for the Canton Kowloon line.³

(3) April 28, 1899, by identic notes between the Russian Minister of Foreign Affairs and the British Ambassador at St. Petersburg, "Russia agrees not to seek for her own account or for Russian subjects any railway concession in the basin of the Yangtse, nor to obstruct

Russia has been represented by the Russo-Asiatic Bank, which has acted in association with several French, British and Belgian houses. *China Yearbook*, 1913, pp. 364-66.

¹ See on this subject *Far Eastern Review*, January, 1914, and January, 1915.

² *British Blue Book*, 1899, CIX, ed. 9131, p. 214.

³ *Ibid.*, p. 325.

directly or indirectly in that region any application for railway concessions supported by the British government." Great Britain made a reciprocal agreement as to territory north of the great wall.¹

(4) In 1905, the British and French Bankers joined in forming the Chinese Central Railways Ltd. for constructing the Hankow-Szechuen line with an expectation of general participation as to railways north of the Yangtse.²

V. To some degree the method of "interlocking directorates" has been employed. German bankers were for many years represented in the Hong Kong and Shanghai Banking Corporation.

VI. There also came into existence two combinations of combinations, one including English, American, French, and German syndicates for industrial (especially railway) loans; the other including finally the four nationalities just named and Japanese and Russian banks, for administrative loans to the Chinese government.

The combination as to railway loans goes back to the British and French combination of 1905 just mentioned. In 1907 the Germans by their determined competition³ made it necessary for the associated British and French to admit them to participation in (a) the railway from Tientsin to the Yangtse (which they had declined to share in 1898), and (b) the system of railways from Canton through Hankow to Szechuen. The American bankers were received in 1909, in connection with the second of these railway systems, through the revival at President Taft's insistence of a claim originating half a

¹ British Blue Book, 1899, CX, cd. 9241, p. 455.

Laboulaye, *Chemins de Fer de Chine*, pp. 182 and 206. *Far Eastern Review*, January, 1914.

³ *London Times*, April 13, 1914.

dozen years earlier.¹ The international combination as to government loans came about in 1910 and 1911. The American bankers had contracted in October to loan £10,000,000 to the Chinese government, partly to develop Manchuria but mostly for reform of the currency. In November, 1910, the bankers of Great Britain, France, and Germany joined with the Americans in an agreement for coöperation not only in this loan but in all future loans for the administrative needs of the Chinese government.² Russian and Japanese representatives were included in May, 1912.

The non-competitive, uncommercial, one may fairly say predatory character of railway loans to China was

¹ The correspondence which our own government published showed that this claim had no substantial foundation. Minister Conger in a communication to the Secretary of State, September 27, 1904, said that the Chinese government had "promised in writing that, if foreign capital were necessary, American and British should have a preference." (Quoted in *For. Rel. U. S. 1909*.) When this important communication from the Chinese foreign office was published in 1909, it appeared that the Chinese government had promised merely to *consult* with American capitalists if foreign capital was needed. The legation at Peking sent to the Secretary of State June 9, 1909, (*For. Rel. U. S. 1909*, p. 154) a "translation of the note on which our rights to participate in a foreign loan are based." In the note quoted, the Chinese foreign office (August 15, 1903) said that it had rejected repeated applications by the British legation on behalf of British capitalists, who were told "that if in the future it should appear that foreign capital ought to be borrowed . . . when the time came applications could be made to the British and American companies. In short when companies of various nationalities apply to China for concessions, it must always remain with China to deal with the matter. It is not possible to regard an application not granted as conferring any rights." This claim, which consisted in being told we had no claim, was for six years ignored by American capitalists. On two occasions, July 25, 1905, and September 19, 1905, the British Ambassador in Washington had inquired whether American capitalists desired to participate, but no response had come from the capitalists, the publicity was given their repeated inquiry. On October 16, 1905, according to a memorandum of the British Foreign Office submitted to Ambassador Reid June 7, 1909, "the British Ambassador at Washington had been directed to inform the United States Government that the British group, on the assumption that American capitalists did not desire to proceed with the loan, would proceed in conjunction with a French group. No objections were raised, and on December 7, 1905, a copy of the Anglo-French agreement was communicated privately to Mr. Carter of the United States Embassy at London, with a letter intimating that the offer to American capital of a share of the loan must be understood to have lapsed. No reply appears to have been received to this letter. — The negotiations entered upon in 1905 have occupied the attention of the legations and the financial groups almost continuously to this date; the fact that these negotiations were proceeding has been a matter of common knowledge, and at no period has any intimation been received of a desire of American financiers to take part in them."

² *London Times*, May 21, 1913.

evident from the outset. In 1897 certain Belgians secured a franchise for a railway between Peking and Hankow. Their method consisted in accepting any terms offered by the Chinese government, thus excluding their rivals by pretended competition, and then by diplomatic pressure, with the aid of the Russian and French ministers at Peking, forcing the grant, by amendment, of terms they were willing to accept.¹ Great Britain by one display of superior force obtained from China five railway concessions:² 1. Shanghai-Nanking; 2. Pukow-Hsin Yang; 3. Shanghai-Hangchow-Ningpo; 4. Canton-Kowloon; 5. The line of the Peking Syndicate (the Taokow-Chinghua Railway). Great Britain further appropriated a position on the Shantung coast having in itself no great economic value but only what was called a "purely moral" value, in

¹ "A foreigner of some experience in such matters recently expressed his conviction to the writer that, broadly speaking, to achieve success with China it is sound policy to obtain a grant of the right you require in principle and then with the aid of your minister in Peking, if necessary, proceed to dictate to the Chinese the conditions on which it is to be held." Kent, *Railway Enterprise in China*, p. 98. (Note the word "dictate.")

Similarly Mr. C. D. Jameson: "Broadly speaking, not any of the syndicates holding concessions in China has conformed in letter or spirit to the terms of the agreement under which the concession was granted. The existing concessions were obtained by pressure brought to bear upon the Chinese government by the government representing the nationality of the syndicate, and by money paid to individual officials for their good will and influence." (This with some exceptions.) "In every instance, as soon as the original concession has been granted in accordance with definite and written agreement as to terms, the syndicate has commenced a campaign to have the terms modified, always to the betterment of the syndicate and to the detriment of China." Treaties with foreign nations have generally contained the most-favored-nation clause. Any advantage claimed by one nation is thus claimed by others. C. D. Jameson in *Engineering and Mining Journal*, quoted in *Engineering Magazine*, vol. xxx, p. 118.

"The only railway loans on contracts in China devoid of political significance are the Peking Mukden loan, the Taoching purchase, and the recent contract for the Shansi Shing-Ti Fu line." *Far Eastern Review*, January, 1915.

² The British minister at Peking, on orders from Lord Salisbury, exacted from the Tsung Li Yamen a promise to show him the Peking-Hankow contract with the Franco-Belgian syndicate before signing it. In making this promise the Chinese officials had, of course, no motive but fear, and in thereafter neglecting to observe it, no compunctions of conscience. Salisbury was, however, indignant when the contract was signed without being exhibited to the British minister and demanded not only apologies but compensation, directing his representative at Peking to fix the number of days for compliance "after consultation with the admiral." (Laboulaye, *Chemins de Fer de Chine*, p. 18.)

facilitating pressure on China.¹ The German concessions in Shantung were extorted by an even franker exhibition of military power. The agreement with Russia for the Chinese Eastern Railway, in Manchuria, was signed (August 29, 1896) not from commercial considerations, but, if not in fear, at best in gratitude for denying to Japan the Liaotung Peninsula, which was afterwards appropriated by Russia herself.² French enterprises in southeastern China have been a sequence of French colonial policy in that region, a policy inaugurated there as in India in commercial rivalry with England, under the auspices of military leaders. The right to build a railway into Yunnan was successfully "demanded" to "equalize" matters, when Great Britain and Germany extorted for themselves railway concessions and surrender of territory.

In 1898 the American-China Development Company under the leadership of Mr. Calvin S. Brice obtained a concession for the Hankow-Canton railway. This agreement was also far from being a strictly commercial transaction. The Chinese government gave a preference to the Americans because our nationality was regarded as politically harmless; but this also proved disastrous to the Chinese. The American capitalists were not, in fact, investors; their object was promoter's profit. The Chinese government bonds received by the concessionaires were sold in Europe; enough shares of the company to give control were sold to the Belgians, notwithstanding an agreement not to sell the property. The Chinese government was alarmed at this and escaped from its adventure in trustfulness by buying

¹ This incident serves to exhibit the method by which the commercial desires of European states are attained in China. British Blue Book, 1899 (ed. 9131, CEX), quoting the *Norddeutsche Zeitung*: *Wei Hai Wei* "has no hinterland, and it may be said that the value of its acquisition is purely a moral one. The principal value of the position is, as the Times rightly points out, the facilities which it affords for exercising an influence on China."

² Laboulaye, p. 34.

out the American company.¹ These men had built 32 miles of railway through level country, besides about 50 miles of earthwork and surveys of uncertain value. They were paid \$6,750,000 gold, of which less than one half was compensation for actual expenditure, the larger part being profits never earned but merely hoped for.

There is evidence that the restraint upon competition "beneficial only to the Chinese"² has in general produced the effect of adding to the burden of the Chinese nation more than the amount of any saving through control by more experienced and, as alleged, more honest foreigners.

(1) Railway construction by the Chinese central government³ seems on a comparison of costs to have been more economical than construction by the foreign syndicates.⁴ Such a comparison cannot be made with

¹ Kent, chap. 12. American interests acting through Morgan and Company had regained control, apparently because of the Chinese complaints. *For. Rel. U. S.*, 1905, p. 128.

² *London Times*, September 26, 1913, referring to an agreement in 1895 with German bankers.

³ Provincial railroad building has been in general very bad, at great expense with scant results.

⁴ The following table gives costs per mile in American gold dollars:

A. Foreigners in complete control:	
Hankow-Canton (American)	\$ 83,336
Peking Syndicate line (British) less than	35,000
Canton-Kowloon (British) construction difficult and expensive	250,000
Shanghai-Nanking (British)	76,880
B. Foreign chief engineers under authority of Chinese director general:	
Peking-Hankow (French-Belgian-Russian)	41,380
Peking-Mukden (British)	41,800
Shansi (French-Belgian-Russian)	105,000
Kaifeng-Honan (French-Belgian-Russian)	51,000
C. Chinese in complete control:	
Peking-Kalgan	41,000
Sunning (by provincial government)	22,800
Ping-Hsiang	32,000
Nanking City (by provincial government)	24,187
Chekiang	26,000
Kiangsi	34,000
Fukien (by provincial government)	24,000

These figures are taken in part from the *China Yearbook*, 1913, in part from the *Far Eastern Review*, April, 1909. They have thus been gathered by competent persons,

precision. The foreigners claim that their construction has been better. The native built roads, however, seem to serve the purpose fairly well. The most conspicuous example of success by Chinese railway builders is the Kalgan Railway, completed in the face of great engineering difficulties at moderate expense. This and the Sunning line probably represent what may reasonably be expected of native railway construction, if allowed to develop for a time unhampered.

(2) In particular instances, Chinese officials have found it possible to purchase railway supplies at lower prices as an evident result of evading foreign control. Thus, the Chinese director-general on the British section of the Tientsin-Pukow road refused to be guided by the British chief engineers, and so obtained cars at one-half the prices paid for similar cars on the Shanghai line.¹

(3) Other capitalists and railway builders equal in reputation to those favored by the government of Great Britain were for years willing to undertake contracts on terms more favorable to the Chinese, but were excluded for want of government support.

Loans to China were not economically advantageous to most of the lending nations. It is true that Great Britain and probably France could spare capital for industrial use in China. But it has been admitted many times by spokesmen for German interests that German capital could not be spared in large amounts for that use.² Mr. Brice's American syndicate had procured the

but it is hardly to be expected that the accounts of Chinese railway building on which the compilers have had partly to rely have been in all cases carefully or even honestly kept and made public. The costs of the Kiangai and Sunning lines are said to be "estimated."

¹ "Never before have bridges and rolling stock been delivered so cheaply." *Far Eastern Review*, January, 1913.

² Dr. Dernburg in a letter to the *Berliner Tageblatt*; the *Ostasiatischer Lloyd*, October 3, 1913; debates in the *Reichstag* (*Far Eastern Review*, August, 1914); the

franchise only to sell it. Mr. Conger took pains to claim for American capitalists a privilege which they did not ask for and which was accepted after five years only because Mr. Taft urged this dubious blessing upon them. They abandoned the consortium in 1913 with no great show of regret. Even the British made no use for seven years of the Canton-Kowloon concession which the British minister had exacted "after consultation with the admiral."¹ It need hardly be said that Japan and Russia could not, on economic grounds, spare capital for investment abroad.

The official groups, national and international, have been forced by competition within their own ranks and from without to give up the greater part of the field they claimed for their own, and in those loans which they have succeeded in placing to grant terms strongly influenced by competition.² Of the three chief attempts, one, the British claim in the Yangtse basin, was fatally impaired. A second, the alliance between English, American, French and German syndicates for financing industrial enterprises, was so unsatisfactory that it was abandoned outright. The monopoly of loans for the support of government was maintained only by continuous struggle and met with frequent defeat.

Frankfurter Zeitung, quoted by the *London Times*, October 6, 1913. The German government had in fact given back in 1909 the concession for the Kiaochan-Ichoufu railway, granted under compulsion in 1898, because "German financial circles did not show great interest" (*Ostasiatischer Lloyd*, October 3, 1913).

¹ Kent, pp. 173-74.

² Since the year 1907, the prices of railway bonds to the Chinese government have been pretty regularly 93 or more, against 90 before that year. In the various loans of the British and Chinese corporation the differences between the prices to the public and to the Chinese government had been, respectively, 7 and 7 before 1907, and 5½, 7, 6, 5, and 4 since that year. (*Prices in China Yearbook*, 1913, p. 334.) By the contracts for railway loans growing out of the German competition about 1907, the Chinese government retained control over the chief engineers and the purchase of supplies. The independence of China in this matter has since been maintained.

The British government has admitted that it has no "special title" in the Yangtse basin.¹ Even the other nationalities which formally recognized the British claim found ways to evade it. Germany encroached upon the British sphere in the Hankow-Canton system mentioned above. But it was an alliance nominally Belgian, including also French (perhaps also Russian) capital and diplomatic power, that contributed most to the defeat of the British as railway builders in the Yangtse. A syndicate known as the *Compagnie Générale de Chemins de Fer et de Tramways en Chine*, secured contracts for two railways having a total length of about 2,000 miles — not far from one-third of the railway mileage of China. Both of these lines were to lie partly in Shansi, which Great Britain had also marked for her own. One, known from the territory traversed as the Lung-Tsing-u-Hai Railway, was to extend from the northwest to the middle east of China.² The second was to reach from Tung Kwan, a point on the Lung-Tsing-u-Hai route in southwestern Shansi, northeastwardly, with an option on an extension southward to Chengtu, the capital of the upper Yangtse province of Szechuen. The alleged participation of Russians in these transactions would be a violation of the Russo-British agreement of 1899, while French houses appeared in the syndicate in defiance of the assumption that France would be represented only through the official group.³

¹ Sir Edward Grey in Parliament: "We have not got any special title to the Yangtse except that we have already got vested British railway interests in that region and we hold that we have the right to direct railways in such districts and that new railway concessions ought to be British concessions." *London Times*, July 11, 1914.

² *Far Eastern Review*, January and April, 1913. According to the contract, signed in October, 1912, this line was to extend to Haichow, about 150 miles north of the Yangtse, including certain stretches of railway already built. The eastern terminus was later quietly changed to Tungchow, at the mouth of the river. On a protest from the British government the syndicate was directed by the Chinese government to make use of the terminus at first designated. The loan was £10,000,000.

³ This syndicate had included the Russo-Chinese (now the Russo-Asiatic) bank, and *La Société Russo-Française de Chemins de Fer et de Tramways*, but it was

From the very beginning of the Chinese Republic, in 1912, the effort to monopolize administrative loans was a struggle of uncertain outcome. President Yuan never recognized the official groups as having any exclusive claim. He borrowed, or attempted to borrow, from a Belgian-English-French-Russian syndicate (apparently affiliated with the Belgian Railway Syndicate), from the Banque Industrielle de Chine, of singularly mixed nationality, from the British independent syndicate represented by Mr. Crisp, and from Arnhold Karberg & Co., representing Austrians and Germans.

The Anglo-Belgian syndicate appeared early in 1912 as a bold and hopeful rival of the official syndicate. From the official consortium President Yuan made emergency loans, and to them, March 9, 1912, he promised a firm option on the comprehensive loan for a general reorganization of the government, "providing the terms were equally advantageous with those otherwise obtainable." But six days later he negotiated with the Belgian or Anglo-Belgian syndicate¹ a loan of £1,000,000, promising them also a preference for further loans up to a total of £10,000,000 "provided the terms offered are equally advantageous to those offered by other parties." The activity of the Belgians calls attention to a grave defect in the planning of a monopoly which failed to include such powerful competitors. Lending by the French and British houses was, of course, a defiance offered to the official groups of those two countries. Repeated protests by the ministers of the four nations induced the Chinese government to cancel the Belgian loan, except as to the advances al-

leged that the Russian elements had withdrawn. *Far Eastern Review*, August, 1913, p. 93.

¹ This syndicate included the Russo-Asiatic Bank, Messrs. Spitzer and Company of Paris and other French banks, and three Belgian companies (*La Société générale de Belgique*, *La Banque Sino-Belge* and *La Société Belge de Chemins de Fer en Chine*). *China Yearbook*, 1913, p. 350.

ready made, amounting to £1,250,000.¹ This imperfect victory of the international group appears to have been secured through their diplomatic rather than their economic power.

In January and April, 1912, a group represented by Arnhold Karberg & Co., including not only Austrians, who were outside the official groups, but Germans, whose nationality was supposed already to be represented exclusively by the Deutsch-Asiatische Bank, negotiated two loans on terms burdensome to China. The amounts were respectively £2,000,000 and £1,200,000, but it was stipulated that the Chinese navy should purchase 12 torpedo boats at £66,150 each from the Stabilimento Tecnico of Triest and six destroyers at £145,057 from the Vulcan Shipbuilding Works of Stettin. After these purchases the remaining sum, less a discount of 8 per cent, was to be paid to the Chinese treasury. It is difficult to determine how far the real serviceability of these vessels may have been a motive in these transactions.² This was one of a series of purchases of war material by the central or provincial governments, in which the essential but disguised purpose appears to have been to get money for use at discretion. The sum of 6,000,000 marks, for example, was borrowed of Krupp's agent at 7 per cent by the Chekiang provincial officials, who received one-third of this in guns, two-thirds in cash.³

The Banque Industrielle loan of 150,000,000 francs at 5 per cent interest, price to China 94.25, was ostensibly an industrial loan, the proceeds being formally assigned to the construction of harbor works at Pukow on the

¹ China Yearbook, 1913, p. 354.

² The rate of interest was 6 per cent and the commission 8 per cent, both comparatively high. The debt was £3,300,000, to be repaid in instalments ending with 1917; the cash realised was £1,413,000. North China Herald, May 24, 1913.

³ China Yearbook, 1913, pp. 337 and 356.

Yangtse and waterworks and electric lights at Peking.¹ It was, however, improbable that the money would ever be applied to these uses. Such franchises at Peking were already held by other persons. The money was apparently to be available for use by the Chinese government, at its own discretion, with the connivance of the bank. The security assigned to the loan (wharfage dues and other receipts at Pukow, certain revenues at Peking, and the alcohol taxes of certain provinces) had no appreciable value as security. Wharfage dues at Pukow could be imposed only with the consent of more than a dozen governments. The other revenues pledged appear to be very scant.² The loan was thus in effect an unsecured loan for purposes not in a real sense specified. In its form at least it was an encroachment, like the Belgian railway loans, on the British Yangtse sphere; in its more probable purpose an encroachment, like the Austrian loan, on the quintuple consortium's claim to monopoly of government loans. The Banque Industrielle was a French corporation, but back of it stood the Peking Syndicate, a British incorporation. The promoters of the Banque Industrielle were two directors of the Peking Syndicate, and shareholders of the Peking Syndicate held 40,000 of the Banque Industrielle's 87,000 shares, 29,000 shares being allotted to the Chinese government. The Peking Syndicate, however, tho registered in England, was in large part owned in France. Thus the British Yangtse claim was assailed by a rivalry ostensibly French but in fact partly British, while the consortium's claim as to governmental loans here faced competition from French, British and Chinese.

¹ London Times, March 26, 1914. Ostasiatischer Lloyd, October 2, 1914.

² Letters in London Times, April 7, May 26, et seq. 1914. One of these letters, from the Banque Industrielle, answers these criticisms as to the purposes and security of the loans so feebly as to concede them.

A few weeks earlier, a group including several of the great London banks¹ tested to the utmost the British government's power to control the employment of British capital abroad. On August 30, a contract was signed by the Chinese minister at London and C. Burch Crisp & Co., representing this group, for a loan of £10,000,000 in gold at 5 per cent, with no provision for foreign control over Chinese financial administration, so long as all obligations were met. The salt revenue was pledged; in case of default the salt administration, or enough of it to meet the defaulted obligation, was to be placed under foreign supervision by being transferred to the Maritime Customs. The Chinese government alleged that the salt revenue was 47,510,000 Kuping taels (about two-thirds as many gold dollars); of this 24,000,000 was already hypothecated. The price to the Chinese government was 89. The proceeds were to be employed "to provide capital for the repayment of existing loans, and for the reorganization of the government and for productive works."

A loan like this, which the British government disapproved, and which the chief continental bourses, acting under government influence or control, would not recognize, was doomed to failure, even tho substantial British banking houses regarded it as otherwise safe. The public subscribed for about 40 per cent of £5,000,000 offered in London, September 27-30, at 95; the underwriters took the rest at a discount, it was rumored, of one-half per cent.² It is to be noted that the consortium was able to defeat the Anglo-Belgian and Crisp loans offered on favorable terms by lenders in good

¹ The Chartered Bank of India, Australia and China, the Capital and Counties Bank, the London and Southwestern Bank, Lloyd's Bank. A preliminary agreement with the Jackson International Syndicate, July 12, 1912, had been transferred to this group. See text of the contract, *Far Eastern Review*, October, 1912; *China Yearbook*, 1913, p. 360; *North China Herald*, November 2, 1912.

² *Far Eastern Review*, October, 1912, p. 201.

standing; but the burdensome Arnhold-Karberg loan and the surreptitious Banque Industrielle loan it did not prevent. Other loans at high rates of interest were carried through, especially with agents of gun makers. But still other desirable loans were abandoned at the demand of the British government.

After the withdrawal of the American group in March, 1913, since our government refused to request their continuing to represent this nation, the remaining five national syndicates, on April 26, 1913, concluded a loan contract¹ for £25,000,000 at 5 per cent. This contract gave to the lenders a share in the salt administration, decidedly less than that formerly demanded.² The chief inspectorate, subject to the Chinese Minister of Finance, was to include a foreign associate, as well as a Chinese inspector-general, and likewise in each salt district a Chinese and a foreign district inspector.

The national and international organizations for effecting monopoly had thus been by no means uniformly successful in either class of loans. Even some of the chief agents in maintaining this policy did not conceal their repugnance to it.³ It was reduced to absurdity when Belgian capitalists, very active and successful in securing railway loans, were not included, and when further there had been a general failure of the European powers to restrain their subjects from competing. Great Britain's adherence was evidently a sacrifice of

¹ *Far Eastern Review*, February, March and May, 1913.

² In 1912, according to the *Far Eastern Review*, the bankers had asked that the salt taxes to be hypothecated for the service of this loan should be administered either by the existing Maritime Customs organisation, or by a separate service, similar to the Customs, under foreign direction.

³ Sir Edward Grey, in Parliament: "I would much rather that railway concessions were given with the good will of the countries from which they are obtained." (*London Times*, July 11, 1914.) The German Secretary for Foreign Affairs told Ambassador Hill in 1909 that the German government had not used its influence to obtain loans for German bankers (guns were not "influence") and Mr. Hill answered that this would be a good plan if all did likewise. (*For. Rel. U. S.*, 1909.)

British economic interests; even a successful monopoly would have constituted, for the chief capitalist nation, that sacrifice of the strong competitor which is a general incident to monopoly, whether pool, trust, or trade union. In this case the strong competitor was restrained; citizens of the states relatively weak as lenders, especially Russia and Japan, and states outside of the monopolist circle, not only profited by the self restraint of their chief rival but used that rival's very strength, her capital, for her defeat, both political and commercial.¹

British interests, therefore, experienced a sense of relief in September, 1913, when the agreements as to industrial loans were annulled.² Soon thereafter the British government announced a willingness to support any responsible British citizens in obtaining contracts for industrial enterprises in China. As a result of these two changes, the capital of the chief lending nation of the world was now available to the Chinese for industrial enterprise on competitive terms. These changes affected only industrial loans. The five power consortium for administrative loans continued, but here also the complaint of monopoly in England had compelled the British government to include in addition to

¹ In the case of the five power loan of April, 1913, it was understood that each nationality would take £5,000,000, but Japan had nothing to lend, so the division was as follows: England, £7,416,680; France, £7,416,680; Germany, £6,000,000; Russia, £2,777,773; Belgians, £1,388,887. *Ostasiatischer Lloyd*, October 3, 1913.

² The futility of the official system as to industrial loans was summarised thus by the *London Times* (September 26, 1913): "The whole theory of a ringed fence in China's finance has of late broken down. . . . These things [the Austrian, and Belgian loans, etc.] show that the five power group has been working upon assumptions which do not take sufficiently into account the inner methods of metropolitan finance. . . . It has not prevented borrowing outside the imaginary ring fence, while on the other hand it has sometimes proved inimical to enterprises which were both honest and sound. The half monopoly has chiefly facilitated the success of external schemes which have sometimes been of very dubious character. . . . There is no reason why the five power group should not continue to exist for the purpose of supplying, under due safeguards, the larger financial needs of China," but it "cannot continue to claim an impossible monopoly of Chinese industrial and railway loans. British firms are warned off, while syndicates from other countries are free to grant what terms they like."

the Hong Kong and Shanghai Bank for the reorganization loan of 1913, four other banks — Barings, London County and Westminster Bank, Paris Bank, and J. Henry Schroeder & Co.¹

Since the international agreement as to railway loans was abandoned, and with it the British government's exclusive support of one group, China has again profited by her growing freedom as a borrower. The British and Chinese Corporation negotiated a loan of £8,000,000 at 5 per cent for a line from Nanking southwest by Nanchang to Ping Hsiang (600 miles). The price to the Chinese government was fixed at 4 per cent less than the price to the public. Construction and control are vested entirely in the Chinese government.² Even more significant is a contract by which Pauling & Company of London undertook the financing and construction of a line from a point on the middle Yangtse opposite Shasi, southwest through Changsha to Hsing-yi in Kweichow province. This firm, said to be "the most experienced and capable railway builders in the world," had been ready in the days of the monopoly to build railways more cheaply by one-fourth to one-third than the British and Chinese corporation. They now agreed to provide £10,000,000 at 5 per cent; to submit for approval by the Chinese officials specifications and costs of each section, and to accept, for their services as builders, a commission amounting to less than 8 per cent.³ This plan is doubly advantageous. It is cheap, for in the construction of the Philippine railways our government allowed the contractors a commission of 15

¹ China Yearbook, 1913, p. 365.

² By this contract the British chief engineer was to be appointed by the Chinese authorities and subject to their orders. British goods were to have a preference, unless the Chinese officials, on calling for tenders abroad, should find it more economical to purchase elsewhere. *Far Eastern Review*, July, 1914, p. 49. *Ostasiatischer Lloyd*, April 3, 1914; January 8, 1915.

³ *Ibid.*, January 8, 1915. *Far Eastern Review*, July, 1914.

per cent, and 10 per cent has been granted by the British government for similar work in India.¹ In addition, it avoids impugning the honesty or capacity of Chinese officials, since the persons who furnish the capital themselves employ it.

The policy of exclusive preference to certain financial groups and participation in this policy by the United States, has been defended for the following reasons:²

1. The official banks were houses of high character, great prestige, and established business connection, able to place the bonds to advantage, and sure to treat the Chinese with an enlightened liberality and moderation not to be expected of the "adventurous and sometimes extortionate free lances of high finance" whom the several governments excluded.

2. Foreign control of Chinese financial administration was necessary in order to safeguard the interest of investors or even to induce capitalists to buy the Chinese bonds.

3. Promiscuous borrowing and use of funds borrowed by the Chinese might result in default, perhaps seizure of Chinese territory by foreign lenders.

4. Mr. Taft and Secretary Knox desired participation by American bankers and the American government in order that our economic interest might give this nation a voice in international councils as to Chinese fortunes, so that we could restrain other powers less well disposed toward China — thus sparing the hare by hunting with the hounds.

If these were the purposes of the international consortium it has lamentably failed of its object.

¹ *Far Eastern Review*, loc. cit.

² Mr. Taft's message of December 7, 1900; Mr. Huntington Wilson's letter of resignation as Assistant Secretary of State, March 19, 1913; the statement of the American Banking group on withdrawing from the international consortium. All but the first of these are in the *Journal of the American Asiatic Association*, April, 1913, with comments and other quotations.

The attempt at monopoly was never thoroughly effective; indeed, the official groups so conducted their deliberations that Chinese officials were almost compelled to look elsewhere for money. When China's very life as a nation was imperiled by the need of financial relief, the international syndicate added to the peril by repeated delays and by demands repugnant to China's national pride, which Chinese officials obedient to public sentiment would make great sacrifices to avoid. We find the syndicate wrangling over the distribution of jobs in the supervisory system,¹ and urging claims clearly extortionate, or evidently hostile to China.²

The rival lenders whom the official groups wished to exclude were of two classes — not only "the adventurous and extortionate free lances of high finance," but also banking houses not inferior to the official banks in character and repute. Reputable underwriters and careful investors were precisely those most likely to be restrained by the evil advertisement of government condemnation. Opportunities for borrowing on reasonable terms from reputable outside groups were thus shut off in the interest of the official groups who themselves for months failed to give relief.

If the monopoly system is to be justified, it must be as a necessary agency for supervising and controlling

¹ The Chinese finance minister complained that "when the loan agreement had practically been concluded, the six governments unexpectedly (so far as China was concerned) raised the question of the advisers." At this time China was unable to meet the bills for advances by the consortium. *London Times*, February 28, 1913. Germany objected to a "slate" which assigned a British adviser to the salt administration, a German to the loan department (*London Times*, February 15, 1913). France objected at one time to the appointment of a Dane, because no Danish money was involved; she objected to a German for the opposite reason, because German capital was invested. *Far Eastern Review*, May, 1913, p. 523.

² It was proposed that China pledge herself to pay for damages incurred by foreign business men during the revolution; this claim apparently included losses of profit which might have accrued but for the civil war. Russia made her excessive Boxer indemnities a claim to special consideration in the appointment of advisers under the loan contract. Russia and Japan objected to loans for the industrial development of Manchuria. *Ibid.*, *China Yearbook*, 1913.

Chinese finance. The whole question hinges on the need of this supervision as a means of maintaining China's solvency. That is a question of opinion, and the preponderance of competent opinion, Chinese and foreign, condemns the restrictive system. China does not belong to the child races; no foreigner who knows the Chinese pretends that we are their superiors in intellect. In this matter the Chinese officials had every advantage in knowledge of the facts which vitally affected their nation, and were under no suspicion of defect, either in inclination or ability, to reach a wise conclusion. They took just account of popular feeling; the foreigners proceeded as if China was devoid of national pride. National sentiment, even in China, is no less substantial a fact of public finance than national revenue.

Even the foreign official opinion which maintained the system of supervision, is clearly open to suspicion. It must be understood that the restraints upon China's fiscal system extend far beyond the salt revenue. With an eye to his own advantage, the foreigner has denied her, under old treaties, the right to increase duties in foreign trade. If import duties were increased only so much that they would yield 5 per cent on the value of goods imported, this would give (according to Sir Robert Bredon's estimate) an added revenue of 7,000,000 taels — nearly half enough to meet all claims against the salt revenue on account of foreign loans.¹ The foreigner, in order to make sure that China's revenue is sufficient to pay her debts, is willing to sacrifice her independence, to embarrass her rulers and risk civil war; but he will not sacrifice for this purpose an advantage to his own traders. An increase of duties to a level much below that common in European countries might possibly free

¹ The loan service secured by the salt revenue was 16,250,000 taels. *Far Eastern Review*, May, 1914.

the Chinese government permanently from the poverty which is its chief embarrassment. This restraint on China's import taxation is alone enough to demonstrate the moral incompetence of the powers to act as China's guardians and the small value of their opinion as to China's need of that guardianship.

The restrictive system as a means of maintaining China's solvency and territorial integrity is not only condemned by the preponderance of competent opinion, Chinese and foreign, but the understanding between syndicates and bankers was of such a character that it might almost have seemed calculated to bring about the subjection of China to foreigners by force of arms. For the collection of the debt the creditors relied upon an ultimate resort to armed force. An armed movement against China might have followed even a temporary default, whenever such a movement seemed proper to Russia, Japan and the rest, under the conceptions of international ethics, now prevailing in the world. By withdrawing from the financial concert of nations, our government reserves a right of protest, which, by continuing in that concert, we should certainly have surrendered.

Nor can the policy which President Wilson abandoned find any better justification as a device for securing commercial opportunities for Americans. There is at least as much reason for anticipating precisely the opposite effect. Great Britain, as we have noticed, ultimately abandoned the international monopoly as fatal to her commercial interests. Belgian capitalists had already been highly successful in receiving Chinese loan contracts precisely because they were not members of the official alliance. Coercion through international monopoly had proven less serviceable than reliance upon

the customer's free will. Our course in seeking to aid American investors in China was therefore plain.

In conclusion, the national and international complex of monopoly in loans to China has, to the degree of its power, added to the costliness of railway construction and added to the expensiveness of loans for administrative use; it has driven from the market lenders in good standing and brought about borrowing from other lenders on usurious terms. It has created conditions dangerous to China's political integrity. It has, however, been checked and almost destroyed by the play of economic self-interest manifested in normal fashion through competition, which the power of governments and agreements between bankers have not been able to restrain.

II

FINANCIAL PROGRESS OF CHINA UNDER THE NEW RÉGIME

The immemorial uncertainty and confusion of Chinese finance were further confounded by the revolution, which caused an extreme decrease in revenue and a considerable increase in demands upon the public treasury. The land tax was formally remitted by President Yuan at his accession in January, 1912,¹ probably in deference to an ancient custom which suspended payment on this account for a year at a change of dynasty. Until the close of 1912 there was no effort at systematic collection of taxes.² The provinces generally remitted nothing, total receipts at Peking from collections by the provincial governments falling to less than 40 per cent of the 50,000,000 taels which they ordinarily sent to Peking before the revolution.

¹ Peking despatch to *Ostasiatischer Lloyd*, March 13, 1913.

² *London Times*, January 17, 1913.

The national assembly (Tsu Cheng Yuan) adopted for 1911 a budget of 301,910,296 Kuping taels income, and expenditure 298,448,365 taels.¹ But Prime Minister Tang's budget in March, 1912, calculated a deficit of 200,000,000 taels and this was only half the shortage estimated by the Finance Minister in October.² Yet the national assembly was able to persuade itself in preparing a budget for 1912 that there would be only a trivial deficit. There was in fact no sure basis for budget making, no precise knowledge of actual revenue in previous years,³ and no means of anticipating the effect of new conditions upon the fiscal balance. The budget for 1913, the second year of the republic, showed an increasing deficit — about \$300,000,000 Chinese silver⁴ (roughly about \$130,000,000 U. S. gold), considerably more than the great loan then contemplated. When the first half of the year had passed, an official estimate put the expenditure for that half-year at \$168,823,452 and receipts at less than one-third as much, \$51,336,880.⁵ It was this desperate situation which the government sought to remedy by loans, and even the five-power loan of May, 1913, resulting in a debt of £25,000,000 and yielding £21,000,000, was half absorbed by debts already urgent. It was typical of the prevailing confusion that in the last-mentioned estimate certain items of revenue like railway receipts were omitted, and charges against the provinces not proper to a national budget were included; also the statement of expenditures included sums which were known not to have been spent at all.⁶ In September, 1913, a representative of

¹ China Yearbook, 1913, pp. 307-08.

² North China Herald, July 5, 1913.

³ After the first budget was adopted by the first national assembly, a committee accidentally stumbled upon 50,000,000 taels which had been overlooked. North China Herald.

⁴ *Ibid.*, January 11, 1913. Dollars are Chinese silver. Gold is specified.

⁵ Peking Daily News, quoted by the Far Eastern Review, July, 1913.

⁶ North China Herald, July 5, 1913.

the government reported to a conference at Peking,¹ representing the provinces, that the salt revenue might be about \$15,000,000, instead of a normal \$70,000,000, stamp taxes \$980,000, miscellaneous taxes, \$4,350,000, fees for general registration of land-titles² \$3,630,000; but none of these could be counted on with confidence. Nearly 51 per cent of total receipts was procured by borrowing or deferring payment; debt payment likewise constituted the largest single share of expenditure on foreign loans currently \$157,000,000; foreign debt overdue more than \$103,000,000; besides more than \$38,550,000 on which payment was defaulted. The provinces, sending little, were generally asking for help from Peking. As to domestic loans the government spokesman at the Peking conference mentioned above confessed that "in our country the government has never enjoyed great confidence in the business community, and further, in the last few years, as also under the Manchu dynasty, there have been mistakes which may well prove fatal to confidence." The situation was aggravated by a great quantity of depreciated provincial paper money. In this base medium the provincial governments remitted their scant contribution.³ As guardian of the nation's welfare the Peking government could not avoid a general responsibility for redeeming this paper. A formidable rebellion in 1913 and warfare with robbers caused heavy expense. At the beginning of 1914, it was impossible, for want of funds, to pay official salaries; and somewhat later Sir Richard Dane, of the salt administration, estimated that the revenue from that source would not be sufficient for any additional loans.

¹ *Ostasiatischer Lloyd*, September 26, 1913.

² This could be realized only once.

³ In Kwangtung these notes depreciated 30 per cent or 40 per cent and were maintained at that only by tyrannical proclamations on the part of the authorities. *London Times*, January 1, 1914.

By the end of May, 1914, it was recognized that the whole aspect of things had begun to change. Tho the customs revenue had fallen off, the government announced considerable remittances from the provinces.¹ The revolutionists were less active. "White Wolf," most formidable of the bandits, had been checked in his advance to Szechuan.² The salt revenue exceeded the claims against it for debt payment. On May 22, the *Times* Peking correspondent reported that the Chinese were so far encouraged that they hoped that only a relatively small additional loan of \$7,500,000 would be needed. These were, however, merely foreshadowings. The European war reduced railway receipts for the second half of 1914 by 20 per cent ³ (about \$4,500,000) as compared with 1913, and maritime customs by 5,000,000 taels. Further expenditure necessary to maintain China's neutrality amounted in less than two months to more than \$500,000.⁴ The unfavorable rate of exchange for silver in comparison with gold added to the burden of foreign debt payable in gold with revenue accruing in silver.⁵ Yet, in contrast with the recent frightful deficits, receipts at the close of 1914 were reported at \$170,000,000 and expenditures at \$168,880,000 — leaving a slight surplus on deposit in the national bank.⁶ This calculation, it will be seen, was not fully justified, tho it is not an unfair reflection of the course of events.

It must be remembered that the political entity on which China had been forced to rely in dealing with

¹ The treasury announced receipts for July amounting to \$13,989,583, 874,242 taels, and 696 strings of cash. The medley of monetary units is significant.

² London Times, June 27, 1914.

³ Far Eastern Review, February, 1915.

⁴ Ostasiatischer Lloyd, October 2, 1914.

⁵ The exchange value of the tael averaged 12½ per cent less in 1914 than in 1913. Journal of the American Asiatic Association, March, 1915.

⁶ Peking Jih-Pao, quoted by Ostasiatischer Lloyd, January 8, 1915.

financial difficulties could hardly be called a state. China had been through indefinite ages an amorphous aggregate of a million clans, lacking cohesion, lacking clear-cut definition of organic parts and functions, lacking any vigorous common control. The imperial authority was never sure of obedience. An edict was hardly more than a challenge which might be ignored by a strong viceroy or defied by a village mob. The delimitation was quite uncertain between the revenue due to Peking and to the provincial governments, between the public revenue and official perquisites.

The difficulty of restoring a favorable balance between income and expenditures was vastly augmented by the need of swiftly reshaping and strengthening the ancient system, making of this political raw material a mechanism like the fiscal systems of foreign states. Financial reform was necessitated by the rapacity of those states, through the burden of indemnities and through military expenditures for defense against them. Their intruding presence, however, also gave to the Chinese government the power of imitating their more effective financial system, and this in two ways: by the aid of loans which consolidated the power of the government at Peking, and by the hate and fear which stimulated a rapid growth of national feeling. The mere inconvenience of dealing with a score of governments had, through the half-century since loans to China began, inclined foreign capitalists to prefer lending to the central rather than the provincial governments. The great loan of May, 1913, enabled the president to defeat the states-rights party which rose in rebellion during that summer. The national spirit, long gathering force in resentment at foreign outrage and insult, received its last great impulse when Japan compelled Yuan's government to sign the treaty of April, 1915. A foreign editor at

Shanghai overstated what was nevertheless one of the chief events in the whole history of China, by declaring of this humiliating agreement and its effect on China's national spirit that "the barriers between the eighteen provinces have at last fallen." It is substantially significant as well as curiously interesting that Dr. Chen Chin Tao wrote an article during these recent years of reorganization, recalling the history of the United States in the similar period and referring with approval to the writings and policy of Alexander Hamilton. The political reorganization has proceeded somewhat in accordance with the Hamilton principles.

The new government declared its right to control of the chief agencies of internal commerce. In May, 1911, an imperial edict nationalizing the railways had met with a resistance so vigorous as to precipitate the long-impending revolution and overthrow of the Manchu dynasty. But in 1915 a similar announcement by the ministry of communications was little noticed.¹ As to finance, the provincial governments have yielded their earlier claims against the "salt gabelle" and that system is now for the first time managed by officials responsible to the ministry of finance, and not to the provincial authorities.² Another feature of the new nationalism is an attempt to bring under systematic control the multitude of unregulated and irresponsible banks, which have constituted one of the chief obstacles to the proper development of business. Early in 1915 most banks had obeyed an order requiring semi-annual

¹ *Ostasiatischer Lloyd*, June 4, 1915. The feebleness of the imperial government as against the provincial had often been clearly manifested, if less impressively. Thus, in the case of the Shanghai Hangchow Ningpo Railway (*London Times*, March 28, 1910) the provincial railway bureau proceeded with the work of construction in defiance of a treaty between the British concessionaires and the Peking government, which practically admitted its defeat.

² Interview with Financial Commissioner Chang. *London Times*, February 11, 1913. See also description of the new system below, pp. 771-4.

reports to the ministry of finance showing assets and results of their operations with a concise balance sheet of income and expenditure.¹ Late in 1915, the ministry promulgated rules forbidding the unauthorized issuance by banks or large mercantile firms of notes bearing no date of payment, requiring those who already have issued such notes to recall them within three months and meanwhile to cover them with 50 per cent of cash and 50 per cent the bonds of government or large business houses.² In order to safeguard the public credit the government has assumed a heavy burden in redeeming large amounts of provincial paper money.³ At Canton the paper dollar was worth only thirty-four cents until the government redeemed, at fifty, notes to the amount of \$31,000,000. In Szechuan the notes were accepted in payment of the salt tax and burned in amounts so great that the remaining notes advanced to par. The revolutionary government at Nanking had offered to the public, January 25, 1912, \$10,000,000 of 8 per cent bonds which were taken by various persons, in a spirit of patriotism rather than investment, to the extent apparently of less than \$6,000,000. These bonds began at once to depreciate and in August of the same year fell to 50 per cent. On February 20, 1915, at a public drawing in Peking, one-fifth of these bonds (\$1,153,528) were redeemed. This contrasted strongly with the failure of the imperial government to redeem a domestic loan.⁴

It has frequently been observed that Chinese dependence upon foreign capitalists has resulted in large part

¹ North China Herald, September 11, 1915. *Far Eastern Review*, February, 1915.

² North China Herald, December 4, 1915. It does not appear that this regulation has been thoroughly successful.

³ "The issue of paper money has now been brought under control." Report on Foreign Trade, Maritime Customs, 1914. According to the Times, January 16, 1914, the paper money in the provinces exceeded \$129,000,000.

⁴ China Yearbook, 1913, p. 328. *Far Eastern Review*, February, 1915.

from a lack of popular confidence in government, that there is perhaps wealth enough in China to supply the needs of the state. The Chinese government had more than once looked for relief to those rich but unattainable reservoirs.¹ A government which had been able to maintain its solvency only by foreign loans was suddenly, with the outbreak of war in Europe, deprived even of that perilous recourse, and forced to renew the appeal to its own citizens just at a moment when the growing national spirit was ready to meet such an appeal. Two internal loans have been placed successfully. In 1914 subscriptions to the sum of \$16,000,000 were called for. This amount was later increased to \$24,000,000 and this total was oversubscribed. The issue price was 88, interest 6 per cent, redemption to continue from the fourth year, part of the annual surplus of the Peking Hankow railway being pledged for this purpose. The bonds were issued in amounts as low as \$5.00 and were to be receivable in payment of taxes.² The administration of the loan was placed in the hands of a bureau of fifteen men, representing the ministries of finance and communications, the government banks, the Franco-Chinese bank, the maritime customs, private banks in good standing and the largest subscriber to the loan. Subscriptions for a second domestic loan of \$24,000,000 at 90, interest 6 per cent, payable in six yearly instalments, beginning with the third year after issue, were opened April 12, 1915.³ The Hong Kong and Shanghai Banking Corporation had been asked to assist the Bank of China and the Bank of Communications in making the new issue.

¹ In 1896 an offer to the Chinese public of 100,000,000 taels had realized only 4,000,000 taels. *Ostasiatischer Lloyd*, July, 1914.

² *Far Eastern Review*, September, 1914. *Ostasiatischer Lloyd*, August 14, 1914.

³ *Far Eastern Review*, April, 1915, gives text of prospectus and regulations.

The ministry of finance was to raise the full amount of \$1,440,000 (one year's interest) and hand it to the Inspector General of Customs to be deposited in the two state banks as a guarantee for interest. As a further security the ministry of finance was to transfer every month to the Inspector General of Customs \$120,000 which the Inspector General would then deposit in those banks for payment of interest as it fell due. The participation of the foreign bank and the foreign Inspector General and the elaborate provision for interest payment showed a consciousness on the part of the Chinese government that the public confidence was still not to be counted on with entire assurance. Bonds were issued in denominations from \$5.00 to \$10,000. The loan was quickly oversubscribed by about \$1,000,000.¹

These loans appear to have been obtained with some degree of official pressure in some places. In Fakumen \$8,000 had been allotted to the district, tho official urging there did not "amount to compulsion."² "Most of the subscriptions were made by Chinese capitalists, perhaps here and there with a hint from the officials, who perhaps were ambitious to make a good showing for their districts, and may at times have exceeded their duty. . . . In eastern Shantung, where dwells only a poor population, the securities were forced upon the peasants. The local official inquiring through the police hunted up the fairly well-to-do and wrote them notice of the amounts they must pay. Recalcitrants were compelled to pay. The people were afraid the loan would not be repaid. Often a certain sum was assessed against the community. . . . But in general it may be said that the loan was signed willingly."³

¹ *Ostasiatischer Lloyd*, October 27, 1915.

² Correspondence, *North China Herald*, May 15, 1915.

³ *Ostasiatischer Lloyd*, January 22, 1915.

The Chinese of Singapore, tho safe from compulsion, offered to contribute. Large sums came from Shanghai.¹ It is reported, tho without details, that officials who exercised pressure to compel subscriptions were called to account by the government.² Three million dollars was subscribed at one meeting of the guild of the Hukuang provinces in Peking.

It must not be overlooked that subscribers to these loans accepted a rate of interest much less than what they might have received in loans to their neighbors. Tho the rate of interest was higher than in the Reorganization loan from the five powers (6 per cent instead of 5 per cent) the price compares very favorably — 88 and 90 for the Chinese internal loans as against 84 for the Reorganization loan. The internal loans were however for shorter periods.

The reform of the salt revenue system has at least equaled any reasonable expectation. In the new organization a general control by the Chinese ministry of finance was combined with foreign expert aid and a check by representatives of the lenders upon the disposition of revenue. By regulations promulgated February 9 and 20, 1914, the Chinese ministry of finance appointed two chief inspectors — one Chinese and one foreign (Sir Richard Dane) — in charge of the whole salt administration, under supreme control by the ministry. The foreign chief inspector was given a right to be consulted by the Chinese chief inspector as to changes in the organization, contracts concluded, and orders issued. The participation of provincial officials in this administration was thus at once abolished.³ All salt revenues are deposited in one of the foreign banks, or if there is none of these in the province, in a branch of certain

¹ *Ostasiatischer Lloyd*, September 11, 1914.

² *Ibid.*, October 27, 1915.

³ *Peking Daily News*, February 21, 1914.

Chinese government banks, or some other bank designated by the foreign lending banks. Funds are drawn only over joint signature of the chief inspector and associate inspector. All orders are issued in the name of the minister of finance and are subject to his approval. He decides in case of disagreement between the Chinese head of the salt administration and his foreign colleague. Appointment, dismissal and control of subordinates rest with the two chief inspectors, subject to approval by the minister of finance. By the regulations of 1913 the tax was fixed at \$2.50 per picul (about .8 of a cent U. S. per pound), and an increase to that rate has been accomplished in a number of provinces. In some provinces the existing rate had been, and still is, much more.¹

The salt administration has been extremely confused, consisting in fact of various systems in various districts.² It has been enormously wasteful. The great obstacle to reform has consisted in the opposing interest of many influential persons. It is said that most officials of prominence are or have been interested in the salt trade, and a correspondent of so thoroughly reliable a journal as the *Frankfurter Zeitung* declared that change was impossible except by armed force.³ The greatest achievement has consisted in a wise choice of reforms which were practicable, a wise avoidance and postponement of changes not yet attainable. Depreciated paper money instead of being refused was taken at par with actual advantage, since amounts thus collected would serve as precedents in fixing sums which might be demanded when payments should be made in good money.⁴ The full amount fixed by the regulations has

¹ In Szechuan the rate is \$1.50 per picul; in Shantung and Manchuria, \$2.00; in Yunnan and Kweichow, \$4.00.

² See *Quarterly Journal of Economics*, May, 1912. *Far Eastern Review*, December, 1912. Morse, *Trade and Industry of China*.

³ Quoted by *Ostasiatischer Lloyd*, May 8, 1914.

⁴ *North China Herald*, February 6, 1915.

not been insisted upon when difficulties have been too great. It is said that the salt inspectorate has never had to force any place to pay up.¹ It has been possible in this business to realize the modern conception of a state as an organism with a central will and motor nerves. Regulations even contrary to custom are enforced in keeping accounts, and making inconvenient reports and remittances. The method of weighing in from the source of production was changed; the accounts were systematized; the tax is now collected before the salt is removed from the depots, whereas, in the past, taxes have been collected after a delay of as much as a year, or paid in depreciated native orders or promissory notes. The salt is properly stored, where it was formerly heaped up in great open yards.²

The latest available reports do not show a spectacular increase of revenue over what is supposed to have been realized in earlier years. An investigation by a Japanese expert, undertaken at the instance of the Six-Nation Banking Syndicate in 1912, showed that the salt revenue had been about 47,500,000 taels per year, with administrative costs of about 7,500,000 taels. Mr. E. T. Williams, in the *Quarterly Journal of Economics*, May, 1912, puts the revenue at 57,000,000 taels. The net revenue for 1913 had, however, fallen to 12,890,000 Shanghai taels or \$17,670,000.³ Sir Richard Dane early in 1914 ventured only to hope for a recovery to \$24,000,000 but estimates the later possibilities at about \$60,000,000. The result for 1914 proved to be \$58,826,000 or 42,911,000 Shanghai taels. The acceptance of paper money at par resulted in a loss of about \$7,500,000.⁴ In November, 1915, it was expected that

¹ North China Herald, January 9, 1915. ² Far Eastern Review, February, 1915.

³ The Shanghai tael is worth not quite $\frac{1}{10}$ of the Haikwan or customs tael.

⁴ Far Eastern Review, February, 1915.

the salt revenue for that year would amount to \$60,000,000 not including Szechuan, Yünnan and Kweichow, the provinces affected by the revolt.¹ The reform in the salt revenue service thus gives promise of greatly augmented revenue in the future; indeed, the estimate of \$100,000,000 for the current year seems not immoderate. But there is a broader significance in the demonstration that obstacles formerly dreaded are not insurmountable, that one of the most influential groups opposed to a regeneration indispensable to China's very life is giving ground.

To this result the aid of foreigners has probably contributed much, but it must not be forgotten that Chinese officials had earlier accomplished similar substantial results. Mr. Chang Hu, the Chinese inspector-general, was raised to this position because of his record as salt commissioner in several districts. In Manchuria he introduced many reforms. "The improvements in management which he introduced proved very efficacious and the revenue showed a remarkable increase."²

These improvements have not been effected without encountering the two traditional and in a real sense constitutional checks on the old depotism — riotous defiance and obstinate neglect of sovereign commands. A law is promulgated and neglected. Another order is issued, or a series of orders, requiring obedience. A proclamation of March, 1915, requires that stamps be affixed to various papers beginning June 10. On August 27, a presidential mandate complains that provincial authorities had apportioned them to prefects, and prefects to towns and villages. This is forbidden and use of stamps is commanded. On October 18, another mandate repeats the complaint and the com-

¹ *Ostasiatischer Lloyd*, November 19, 1915, quoting the *Peking Gazette*.

² *Far Eastern Review*, December, 1913.

mand.¹ Yet this relatively ineffective device has nevertheless been in so considerable degree productive that it is mentioned by the finance minister as an important contributor toward a favorable balance in the fiscal accounts for September.² At the beginning of 1915, the Chinese government was able to show a favorable balance between income and expenditure only by ignoring certain unpaid debts. By the middle of the year every liability had been fully met.³ The customs revenue had fallen off, as a result of the war, by 2,650,000 taels,⁴ the year's operations appear from the imperfect report now available to have resulted in some excess of income over expenditure.⁵ This result has been attained in part by minute but general economies. Superfluous employees have been dismissed. The receipts from the land tax have been augmented by requiring the provincial authorities to defray the expenses of collection out of other provincial revenues. Formerly the charges had been out of all proportion to the amount of the tax. This saving to the national government is about \$2,000,000. In the past provincial officers were required to remit certain amounts of revenue to Peking, keeping the remainder. This is now reversed; the government has fixed standard amounts for the expenditure of the several provinces, ranging from \$2,000,000 to \$4,000,000.⁶

Through the whole range of facts which influence state finance there are indications of gradual trans-

¹ North China Herald, September 4 and October 30, 1915. Stamps are required on a great variety of objects, even bills of small amounts, pawn tickets for \$4.00 and upward, and railway tickets.

² Ostasiatischer Lloyd, October 15, 1915.

³ National Review, July 17, 1915.

⁴ Ostasiatischer Lloyd, January 7, 1916.

⁵ The finance minister in October reported that current monthly receipts were \$8,500,000 and expenses \$7,400,000. Ostasiatischer Lloyd, October 15, 1915.

⁶ North China Herald, February 27, 1915.

formation. It is probable that the new government is somewhat more honest than that of the empire, not merely in the conduct of chief officials (as shown in the redemption of bonds and paper money) but to some degree in local business.¹ The more general interest in matters of government and the coincident growth of newspaper influence are in themselves fair guarantee of improvement. The president has announced certain changes designed to improve the civil service, such as avoiding frequent shifting of officials from one position to another.² The budget for 1916³ is probably an expression of hopes rather than confident expectations, forecasting receipts of \$471,946,710 and expenditures about \$400,000 less. The land tax is put at \$95,972,-818, customs revenue \$71,320,970, salt revenue \$84,771,-365. On the side of expenditure more than \$142,000,000 is assigned to the ministry of war, and \$12,611,583 to the ministry of education. The future is still too uncertain for any trustworthy anticipation of revenue and expenditure. Several new taxes have been applied or projected. According to reports in the native press, an income tax is to be imposed on official salt merchants, and firms and companies generally.⁴ Chambers of Commerce have been asked to aid in this.⁵ A license tax formerly collected from certain shops is to be extended to all the common trades.⁶ The perennial discussion on an increase of the land tax has been revived.

¹ This is disputed, but proof of betterment at certain places in specific transactions outweighs complaints not specific that conditions are no better under the new régime. A foreign resident of China writing to the North China Herald says that in the collection of taxes at his residence there has been a rapidity previously unknown, and an entire absence of "squeeze." Another correspondent at another point says that the registration of land titles there had shown a similar improvement.

² Journal of the American Asiatic Association, November, 1915.

³ Far Eastern Review, January, 1916.

North China Herald, August 21, 1915.

⁴ Ibid., October 23, 1915.

⁵ Ibid., November 13, 1915.

⁶ Ibid., October 23, 1915.

To sum up:

I. The system of international finance long prevalent in China has been inspired by certain opinions commonly found in association, that economic advantage abroad may wisely be secured by the sword, and that a nation moreover gains not only material profit but peculiar dignity ("a place in the sun") from foreign investments by its citizens, either as a sequence or a means to political influence. Concessions and loan contracts have therefore been negotiated in typical instances not by bankers but by diplomats for the ostensible benefit of capitalists not yet designated who often showed no interest in responding to their country's call. Statesmen have found it necessary to reinforce appeals to the lenders' patriotism with hope of gain through terms imposed without the borrower's consent — even in loans not at all demanded by the borrower. In complicity with their governments, capitalists have sought to advance their interests as bankers not by conserving the interests of their clientèle through moderation which would permit industry to thrive, but by imposing upon their own business, in what might under conditions of freedom become the most attractive loan market in the world, the crushing restraints of monopoly and fear. Mineral deposits scarcely if at all surpassed, cargoes awaiting the railways, and travelers eager to pay — all this must halt, because that nation could accept capital so greatly needed only on the terms of monopoly and at the risk of losing its independence as a nation. And yet the failure of China to make freer use of foreign capital is often attributed to the obstinate conservatism of the Oriental mind.

In the alternative between trying only to limit the evil of this system and trying to introduce freedom in borrowing, two nations — Great Britain and the

United States — have officially cast their influence on the side of free contracts. In this, England's prominence as a capitalist nation was especially important. Just before the European cataclysm of 1914 it seemed possible that this healthy principle might prevail. China had begun to enjoy the advantages of cheaper capital. But the future has again grown dark — Japan, taking advantage of the European war has threatened to bring the whole economic as well as political life of China under her very selfish and not very enlightened militaristic domination. So long as this danger continues, a spontaneous and healthful development of Chinese industry is impossible.

II. China has during these years shown an unexpected capacity to supply her own financial needs. The national distress has had an educational effect, unexampled in rapidity and compass. To a considerable degree, even tho incompletely, the Chinese have seized upon certain political conceptions previously foreign but now indispensable to their national salvation. In varying degree they have realized or begun to realize the idea of nationality, the idea of statutes as rules of conduct to be understood and obeyed, the idea of taxation itself as distinguished from tribute, of taxation as distinguished from official perquisites. Through the whole fiscal system, as in fact through the whole state, there extends gradually a process of embryonic growth, scission, unfolding, definition, specialization of parts and organs. The government has exceeded its obligations in redeeming bonded debt and paper currency, it has even acquired financial credit among its own people; it is steadily overcoming a powerful vested interest which seemed a fatal obstacle to fiscal reform.

These institutional beginnings and these fiscal results, achieved in four years of extreme difficulty, have

demonstrated beyond reasonable doubt the political capacity, the practical intelligence and moral poise of that singularly adaptable race. The material conditions for abundant national revenue no one has ever questioned. Current budgets would exact from the Chinese people, per capita, about one-half dollar (American gold). The per capita burden in Japan is about ten times as much. This ratio indicates, with some exaggeration, since Japan is overtaxed, the reasonable possibilities of China's financial future.

A. P. WINSTON.

GROWTH OF LABOR ORGANIZATION IN THE UNITED STATES, 1897-1914

SUMMARY

I. Lack of adequate statistics of trade-union membership in the United States; American Federation of Labor reports, 779.—New York Department of Labor, 780.—II. Plan of present compilation, 781.—Defects in the tables, 782.—III. Movement of membership from 1897 to 1914, 784.—IV. Increase of membership compared with increase in number of gainfully occupied, 789.—Compared with increase of wage-earners, 790.—V. Increase of membership by groups, 792.

I

In all important industrial countries except the United States some agency of the national government collects statistics of trade-union membership. In England the Board of Trade publishes at intervals of three years an elaborate report which includes not only the membership of all unions classified by groups of trades, but also the statistics of income and expenditure. The German Labor Department and the French Ministry of Labor collect and publish similar statistics. It is possible for the student of trade unionism in these countries to trace in considerable detail the growth of labor organization.

The most important index of the growth of labor organization in the United States now available is the membership of the American Federation of Labor. These statistics, however, by no means accurately represent changes in the membership of American trade unions. In the first place, since the Federation does not embrace all the unions in existence, the membership of

the Federation is not an accurate measure of the extent of organization at any given time. This defect, however, would not prove serious for comparative purposes if the unions in the Federation remained a constant part of the total trade-union membership. But this has not been the case. A very large part of the national unions now affiliated with the Federation have come into the Federation after a more or less prolonged period of independent existence. For example, the Western Federation of Miners, although organized in 1892 did not affiliate with the Federation until 1911. It is obvious that the adhesion to the Federation of a union already in existence does not increase the total membership of American trade unions. Moreover, it occasionally happens that a union which has been affiliated with the Federation withdraws. In 1902, for example, the Flint Glass Workers left the Federation and did not re-affiliate until 1913. The membership of the Federation in the former year was decreased and in the latter year increased by the amount of the membership of the Flint Glass Workers, but since that union has been in continuous existence the changes in the membership of the Federation caused by its withdrawal and re-affiliation did not reflect any change in the total membership of American trade unions. In the second place, the statistics of membership reported by the Federation do not reflect accurately in all cases the actual changes in the membership of the constituent unions.¹

Besides the statistics of membership furnished by the Federation reports, another source of information as to the growth of American trade unions has been available in recent years. Since 1906 the New York Labor Department has published annually statistics of Ameri-

¹ For a discussion of the reliability of the Federation's figures for the membership of individual unions, see Wolman, "Extent of Labor Organization in the United States in 1910" in the May, 1916, number of this Journal.

can trade-union membership supplementary to the Federation statistics. The membership of all unions affiliated with the Federation has been taken from the reports of the Federation and to these have been added the membership of such of the unaffiliated unions as could be readily obtained. In the earlier years, 1906-10 inclusive, the membership of a large part of the unaffiliated unions was not secured and an estimate of the membership of these was made. The result is that in these years the total membership of American trade unions as given by the reports varies considerably from the actual membership. In recent years, 1911-13, the actual membership has been ascertained directly from a larger number of the unaffiliated unions and a closer approximation has been made to the real total membership.

II

For the purposes of the present study an attempt has been made to construct a table of trade-union membership which will show as accurately as possible the absolute and relative numbers of trade unionists in the United States for each year from 1897 to 1914 inclusive. This table, which is printed as an appendix, has been constructed in the following manner.

(1) Wherever the statistics of membership were obtainable from the official publications of the union or directly from the union officials, these data were used. By this method, it was possible to find the membership of many unions not affiliated with the Federation. Also in those cases where the affiliation of a union occurred after 1897 it was possible to make use of the statistics of membership prior to affiliation. Where, further, a union dropped its connection with the Federation temporarily or permanently, it was possible to fill in the gaps.

Finally, the statistics of membership obtained from the official records indicate the absolute size and the fluctuations in membership better in many unions than the figures given in the reports of the Federation. For this reason where there was a considerable difference in the data given by the two sources of information, preference was given to the official records.

(2) Where a union's membership was not obtainable from the union's publications, and the union was affiliated with the Federation, the statistics contained in the reports of the Federation were used.

(3) Where a union was not affiliated with the Federation and the membership figures were not obtainable from its official reports, the membership figures given by the Bulletin of the New York Department of Labor were used.

The tables thus constructed represent by no means perfectly the course of trade-union membership during the period studied. The chief defects are the following:

(1) In some unions, the figures of membership are averages for the year, while in others they are for some one date in the year. These dates vary from union to union. Since the dates, however, are fairly well distributed through the year, the figures for total membership may be regarded as a rough approximation to average membership. If the figures were obtainable in all the unions for several identical dates in each year, the fluctuations in the movement of membership would be more marked.

(2) For a considerable number of unions, no statistics of membership were procurable. Thus, for example, the Knights of Labor refused to publish their membership. The total amount of these omissions is small, since the unions involved are relatively unimportant. In a few unions, it was possible to secure the statistics for the

later, but not for the earlier years. Thus it was impossible to procure any statistics of membership for the unions in the window glass industry prior to 1903. Since the unions entirely omitted were more important in the earlier years than in the later, the effect of both classes of omissions is to make the membership in the earlier years appear smaller than it actually was. The addition to be made on this account, however, is not large. After liberal estimates for all unions known to exist in 1897, it does not appear probable that the unenumerated national unions had a membership in any year of more than ten per cent of the total of those enumerated. This discrepancy between the actual membership and the membership given in the tables gradually disappears in the later years, since the returns from the unions are then more complete.

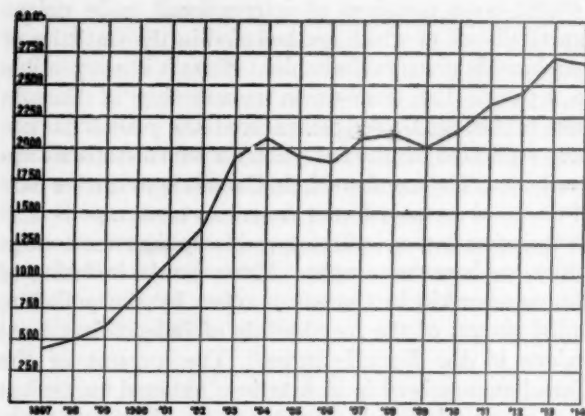
(3) No attempt has been made to estimate the membership of independent local unions, that is, local unions not affiliated with a national union or directly with the American Federation of Labor. In 1914 the membership of such unions in New York State was 38,495 or over six per cent of the total trade-union membership in that state.¹ The number of members of independent local unions is relatively larger in New York than in the United States as a whole on account of the large number of independent unions in the building trades in New York City. It is impossible to say whether the membership of independent unions is larger or smaller relatively to the total trade-union membership than it was formerly, but the change cannot have been great. It may be estimated roughly that the total trade-union membership would be increased by five per cent if the membership of the independent local unions were added.

¹ Bulletin of the New York Department of Labor, September, 1915, p. 15.

(4) The greater part of the American national trade unions embrace in their membership local unions located in Canada. It has been impossible until recently to separate the membership in Canada from that in the United States. Since 1911 the Canadian membership of all unions with branches in Canada has been reported by the Canadian Department of Labor. In 1914 there were in Canada 166,163 trade unionists. Of these 140,482 were members of international trade unions practically all of which are included in the statistics of membership given in the tables. Since it is not possible to separate the trade-union membership of Canada from that of the United States for all the years it has not been separated for the few years for which statistics are available. The membership in Canada is so small a part of the total membership of American trade unions that its inclusion does not affect appreciably the comparisons which are hereafter sought. Moreover the inclusion of the membership in Canada is offset by the omission, noted above, of the membership of independent local unions in the United States. The amount of the Canadian membership of American national unions has been practically equal in recent years to the membership of the independent local unions in the United States. Presumably this condition has not changed greatly during the period under review. The figures of total membership given in the table may be assumed, therefore, to represent the total membership of trade unions in the United States.

III

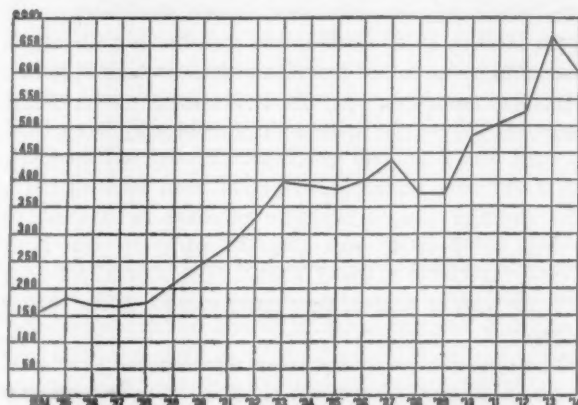
The changes in the total membership are shown by years in the following chart. It will be observed that the changes in membership are closely connected with changes in business conditions. The rapid increase in membership from 1897 to 1904 reflected the business prosperity of that period. The reaction in business in



1904 resulted in a loss in trade-union membership which continued until 1906. The prosperous times of 1906-07 are reflected in an increase in membership in 1907. In the panic year 1908 membership was almost stationary but in 1909 there was a considerable decrease. From 1910 to 1913 inclusive each year was marked by an increase. The fall in membership in 1914 reflected a check to business which was accentuated by the outbreak of the war. The close correspondence between business conditions and the course of trade-union membership would probably be even more apparent if the membership of each union could be ascertained for several uni-

form dates in each year. The figures, as has been noted above, in the table for total membership are averages for the year and therefore show the movement of membership only imperfectly.

That the course of trade-union membership shown by the chart is approximately correct is indicated by the statistics of trade-union membership in New York State which have been gathered annually since 1894 by



the New York Department of Labor. These statistics, collected directly from the local unions, represent the membership of those unions on a specified day in each year. The movement of trade-union membership in the state of New York is shown in the following chart. The general correspondence between the two curves is marked although there are considerable differences in detail. Practically all the differences are explained by the fact that in the New York statistics the figures are for a given date,¹ while in the table for total membership, the figures represent an average for the year.

¹ The membership in 1894 and 1895 is for July 1; in 1896, for October 31 and since 1896, for September 30.

From the foregoing, it may be concluded that the course of trade-union membership in the United States from 1897 to 1914 may be divided into four periods: (1) From 1897 to 1904 was a time of unbroken increase. In this period trade-union membership increased from 444,500 to 2,072,600. (2) From 1904 to 1909, upward movements were quickly counteracted by business depressions in 1904 and 1907. During this period taken as a whole membership was almost stationary. (3) From 1909 to 1913, trade-union membership rose each year until in the latter year, it reached its highest point, 2,700,000 members. (4) In 1914 there was a slight decrease. The total increase in membership from 1897 to 1913 was 2,250,000 members. From 1897 to 1904, 1,600,000 were added and 700,000 from 1909 to 1913. The average annual absolute increase in the earlier period (1897-1904) was 225,000 while in the later period, (1909-13) it was 175,000. The annual per cent increase was, of course, very much greater in the earlier period.

The question naturally arises whether the year 1897 was an abnormally low point in trade-union membership and how far the extraordinarily rapid increase from 1897 to 1904 represents merely the recovery of loss. The statistics of trade-union membership for the state of New York indicate that trade-union membership was practically stationary from 1894 to 1897. Unfortunately the figures for the country as a whole are not procurable prior to 1897, but there is material for a rough estimate. The membership of the American Federation of Labor increased steadily from 1881 to 1893 and was stationary from 1893 to 1897, but for reasons already noted the membership of the Federation is not an accurate index of the course of trade-union membership in the United States. A better indication

is the movement of membership in those trade unions which were in existence in 1892 and remained in existence until 1897. Fifteen unions whose membership can be obtained from 1892 to 1898 had in 1892 a membership of 191,500. Their membership increased slightly in 1893. In 1894 it fell to 147,000. There was slow recovery in 1895 and 1896, and in 1897 their membership was 165,500. Accepting the membership of these unions as an index to total membership we may conclude that membership in 1897 was neither at the bottom of the wave nor at the crest. In the comparisons made hereafter, the year 1897 has been taken as fairly comparable with the year 1914, which is also somewhat below the crest of the wave.

IV

The increase in trade-union membership during the period 1897-1914 was at a much more rapid rate than the increase in population or in the number of gainfully occupied persons. According to the census of occupations the number of gainfully occupied persons increased in the United States from 29,073,233 in 1900 to 38,167,336 in 1910.¹ In 1900, therefore, the trade unionists constituted nearly 3 per cent of the gainfully occupied and in 1910, 5.6 per cent. The percentage of trade unionists thus nearly doubled in the decade. A rough estimate may be made of the increase from 1897 to 1914. The annual rate of increase in the number of persons gainfully occupied from 1900 to 1910 was 2.77 per cent. If it be assumed that the increase from 1897

¹ There is reason to believe that the occupation census of 1910 included certain classes of agricultural workers among the gainfully occupied which were not included in 1900 (See Thirteenth Census, vol. iv, pp. 26-28). The rate of increase of the gainfully occupied was, therefore, somewhat less than that shown by the census. The percentage of trade unionists to the gainfully occupied would have been somewhat greater in 1910 if these classes had been excluded in 1910.

to 1900 was at the same rate, it may be estimated that the number of persons gainfully occupied in 1897 was 26,794,370.¹ The number of trade-union members in that year was 444,500 or 1.66 per cent of the number of gainfully occupied persons. If it be assumed that the rate of increase in the number of gainfully occupied persons was at the same rate from 1910 to 1914 as from 1900 to 1910 the number of gainfully occupied persons in 1914 may be estimated as 42,557,000. The number of trade-union members in 1914 was 2,674,400 or 6.28 per cent of the gainfully occupied persons. The ratio of trade unionists to occupied persons was, therefore, approximately four times as great in 1914 as in 1897.

Obviously the ratio of trade unionists to the gainfully occupied is not an ideal index for measuring the increase in the strength of trade unionism. If a trade union be defined as "a continuous association of wage earners for the purpose of maintaining or improving the conditions of their employment,"² the best index of the growth of trade unionism would be the ratio of trade unionists to the wage-earning population. An increase in the ratio of trade unionists to the gainfully occupied might conceivably occur without any increase in the ratio to the wage-earning population merely through the relatively larger increase of that part of the gainfully occupied population included in the wage-earning class. Since, however, the wage earners are such a large part of the gainfully occupied, it is clear that such a disproportionate increase could account for only a small part of the increase in the ratio of trade unionists to the gainfully occupied.

¹ The increase in the number of gainfully occupied persons from 1890 to 1900 was at the annual rate of 2.23 per cent. If the gainfully occupied population in 1897 is calculated on the assumption that the rate of increase from 1897 to 1900 was at this rate of increase, the number of gainfully occupied in 1897 was 27,212,000 and the percentage of trade unionists was 1.63.

² S. and B. Webb, *History of Trade Unionism*, p. 1.

The census of occupations does not afford data for the complete separation of the wage-earning class, but certain classes that are clearly not composed of wage earners can be partially separated from the total of the gainfully occupied. These are, the employing, the self-employed, and the fee-receiving classes. The census of occupations for 1910 gives for certain groups in these classes comparative figures for 1900 and 1910.¹ The number in these groups is as follows:

	1900	1910
Employers or self-employed ²	6,951,526	7,568,574
Fee-receiving ³	284,290	331,764
	<hr/> 7,235,816	<hr/> 7,900,338

There are other large groups of non-wage-earners among the gainfully occupied which cannot be separated because of the lack of adequate comparative data. For example, in the great group of building and hand trades it is impossible to determine for many groups, such as dressmakers and blacksmiths, what part of the class is employing, self-employed, or employed, and, hence, whether there has been a disproportionate increase in the wage-earning part of the group during the past ten years. The groups which have been segregated above represent, however, a large part of the non-wage-earning groups. If we deduct from the total number of gainfully occupied in 1900 and in 1910 the persons in the non-wage-earning classes given in the above table we have left 21,837,000 in 1900 and 30,267,000 in 1910. The trade-union membership on this basis was four per cent in 1900 and seven per cent

¹ Thirteenth Census of the United States, vol. iv, pp. 54-56.

² There are included here farmers, planters and overseers, boarding house keepers, hotel keepers, restaurant keepers, saloon keepers, bankers and brokers, hucksters, and peddlers, livery stable keepers, merchants and dealers, undertakers.

³ Included in this category are dentists, lawyers, physicians and surgeons.

in 1910, a somewhat lower rate of increase than that shown by the ratio to the gainfully occupied. It is possible that the rate of increase might be still further lowered if the non-wage-earning groups could be further eliminated, but the reduction could not be very great.

V

The unions contained in the tables have been divided into fourteen groups. The classification followed is in the main that used by the English Board of Trade, modified in one or two particulars so as to conform to American trade-union structure. In a final miscellaneous group have been placed those unions which do not fall in any of the other groups or those unions, as, for example the local unions directly affiliated with the Federation of Labor, whose group cannot be determined. The miscellaneous group is not large relatively to the total, in no year exceeding six per cent.

The following table shows for each group the per cent of the total trade-union membership contained in the group for each of the years 1897, 1900, 1910 and 1914. The groups have been arranged in the order of their importance in the year 1897.

The transportation group, it will be noted, has maintained its position as the largest section throughout the whole period. From 1897 to 1900 it fell back somewhat, but since then it has increased its membership at the same rate as the increase in the total membership. The building group has grown even faster. The percentage of the total in this group increased from 15.2 per cent in 1897 to 20.3 per cent in 1914.¹ The mining and quarry-

¹ Part of this growth is only apparent since the Carpenters in recent years have been increasing their jurisdiction over woodworkers. In 1914 it is estimated that the Carpenters had 50,000 woodworkers among their members. This would reduce the membership of the building trades group to 18 per cent of the total, and correspondingly increase that of the lumber and woodworking group.

PER CENT OF TOTAL MEMBERSHIP IN EACH GROUP OF UNIONS
IN THE YEARS 1897, 1900, 1910 AND 1914

	1897	1900	1910	1914
Transportation.....	26.2	21.9	22.5	21.0
Building.....	15.2	17.7	21.5	20.3
Metal, Machinery and Shipbuilding	11.3	9.3	9.2	8.4
Food, Liquor and Tobacco.....	9.9	7.6	5.4	5.1
Paper, Printing, and Bookbinding .	8.5	5.5	4.2	4.1
Chemical, Clay, Glass and Stone ..	5.2	3.4	2.8	2.2
Mining and Quarrying.....	4.7	15.1	12.9	14.2
Clothing.....	3.3	2.9	4.6	5.9
Leather.....	2.9	0.8	2.1	2.1
Public Service.....	2.5	1.8	2.7	3.0
Textile.....	1.8	0.9	1.0	1.1
Theaters and Music.....	1.5	1.1	2.8	3.4
Restaurants and Trade.....	1.4	3.2	2.8	3.5
Lumber and Woodworking.....	1.2	3.0	1.3	0.9
Miscellaneous.....	4.3	5.8	4.4	4.6

ing group increased from 4.7 per cent of the total in 1897 to 15.1 in 1900 and has since maintained its relative importance. In 1897 the mining and quarrying group was seventh in size, but since 1900 it has remained third in size.

The three great groups of transportation, building and mining in 1897 contained 46.1 per cent of the total membership of American trade unions and in 1914 contained 55.5. A large part of the increase in the percentage of the total was due to the extraordinary growth in the mining group from 1897 to 1900. From 1900 to 1914 these three groups have formed an almost uniform part of the total membership of American trade unions. The percentage of total in these groups was 54.7 in 1900, 56.9 in 1910 and 55.5 in 1914. Of the total increase in membership from 1897 to 1914 amounting to 2,230,000, these three groups are responsible for 1,280,000.

The increase of membership in the metal, machinery, and shipbuilding group has been at a much slower rate.

In 1897 it was third in size and contained 11.3 per cent of the total membership of American trade unions. In 1900 it was passed in size by the mining group. It remains in 1914 the fourth group in size with 8.4 per cent of the total membership. The census figures of occupation for 1900 and 1910 do not make possible any very exact estimates, but from the comparison of such classes of occupations as can be made it is reasonably certain that it is not the relatively slower increase in the numbers occupied in this group that is responsible for its loss of position. It is highly probable that the proportion of trade unionists to non-unionists in this group has not increased with anything like the same rapidity as in the mining, building, and transportation groups.

The most notable changes in the relative importance of the other groups have been in the clothing, the restaurant and trade, and the theater and music groups. In 1897 the clothing group was eighth in size with 3.3 per cent of total membership while in 1914 it was fifth with 5.9 per cent of total membership. The restaurant and trade group in 1897 was thirteenth in size with 1.4 per cent while in 1914 it was eighth in size with 3.5. Similarly the theater and music group has risen from twelfth place to ninth and from 1.5 per cent of the total membership to 3.4 per cent.

The groups which have fallen back decidedly in their percentages of total membership are paper, printing and bookbinding, and the chemical, clay, glass, and stone groups.¹ In these groups small sections were already fairly well organized in 1897. Thus the printing trades and the pottery and glass trades were fairly well

¹ The apparent fall in the lumber and woodworking group, as has been explained above, is not real but is due to the transfer of jurisdiction over woodworkers to the Carpenters. If the proper correction is made the lumber and woodworking group is shown to have in 1910 and 1914 approximately the same per cent as in 1900 and twice as high as in 1897.

organized in 1897. But since 1897 comparatively few new unions have been organized in these groups and the net result is that while the organized sections have more than held their own, the group as a whole has fallen behind in its relative per cent of total membership.

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REVIEW

THE NEW INDEX NUMBERS OF THE UNITED STATES BUREAU OF LABOR STATISTICS

THE United States Bureau of Labor Statistics has adopted a new method of computing index numbers and the change in method has been made the occasion for a very full and thorough discussion of the subject. This discussion is to be found in Bulletins No. 173 and No. 181 and Dr. Wesley C. Mitchell is to be congratulated on the thoroughness and lucidity of his exposition. The former includes a brief history of index numbers, a statement of the paramount importance of obtaining accurate statistics from which index numbers may be computed, together with the difficulties of collecting such data, a carefully balanced comparison of the relative merits and demerits of different types of averages and aggregates, and concludes with an account of the tables of index numbers prepared by other statisticians in the United States and elsewhere. The matter in Bulletin No. 181, is devoted to an explanation of the new methods employed in computing index numbers and the reasons for making the change.

Among the interesting topics discussed in the two papers are the relative merits of chain index numbers and index numbers computed to a fixed base, and methods of substituting, adding new items, or dropping old ones, without breaking the continuity of the series as, in a dynamic society, changes in tastes and fashions and in the commodities consumed take place from year to year.

Especially is the importance of gathering and publishing in full the price data emphasized. Indeed this is accorded an importance superior to the particular type of average or

aggregate which may be adopted in manipulating the data. In this connection Professor Taussig's words are especially pertinent: "In regard to all these suggestions, whether for improvement in the arithmetic mean or for the use of a different mean, it must be borne in mind that no index number corresponds to a real thing. It is not like the mean of certain observations in natural science — such, for example, as those for measuring the distance between the earth and the sun — of which any one may err, but whose average will point to a single specific fact. An index number points to no single fact."¹ This being true, it follows that there is no single best method of computing index numbers. Both the items selected and the type of average employed have reference to the purpose in view. What may most adequately represent the facts in one case may be misleading in another. The problem, then, for a compiler of general index numbers is to establish general tendencies in regard to prices most likely to represent the case without serious error for whatever purpose the tables may be used.

When the end in view is specific and capable of precise statement the problem of choosing methods is comparatively simple. Straightforward logic then determines what commodities should be included, what sources of quotations should be drawn upon, and how the original data should be worked up to give the most significant results. Puzzles a-plenty are left, but most of them are limited to finding the best compromise between what logic marks out as desirable and what is feasible in view of the time and money at the investigator's disposal.

Few of the widely-used index numbers, however, are made to serve one special purpose. On the contrary, most of them are "general-purpose" series, designed with no aim more definite than that of measuring changes in the price level. Once published they are used for many ends — to show the depreciation of gold, the rise in the cost of living, the alternations of business prosperity and depression, and the allowance to be made for changed prices in comparing estimates of national wealth or private income at different times. . . .

The compiler of a general-purpose index number, then, cannot foresee to what uses and misuses his figures will be put. For each of

¹ Taussig, *Principles of Economics*, vol. I, p. 294.

the legitimate uses he might conceivably devise an appropriate series. But he cannot conceivably devise a single series that will serve all uses equally well. For the very qualities that make an index number good, say, for the man of affairs concerned with the business outlook, may make it bad for other men interested in the fortunes of farmers, in the effects of the tariff, in the relation between gold output and prices, in comparing changes in price levels in different countries, etc. The day has not yet come when the uses of index numbers are sufficiently differentiated and standardized to secure the regular publication of numerous special-purpose series. Until that day does come the making of general-purpose series will continue, and the makers will go on choosing their methods perforce on rather vague and general grounds. So long also must most users of index numbers put up with figures imperfectly adapted to their ends.¹

The above quotation sufficiently justifies Dr. Mitchell in emphasizing the importance of publishing copious data in full so that the special investigator may have the opportunity of making a selection of material and method most suited to his purpose. The change in the method of computing index numbers recently made by the Bureau is an attempt at a better solution of the general-purpose index-number problem to which Dr. Mitchell refers.

In previous issues of the Bulletin, index numbers were computed by the method of simple averages of relatives. Taking the average of the prices of each of the commodities included in the table from 1890 to 1899 inclusive as a base (100) the relative price for any given year has then been found and a simple average (arithmetic mean) of these relatives has been taken as the index number for that year. The new method is based not upon a simple average of relatives, but upon aggregates of the total value in exchange of each of the commodities. Each commodity is therefore weighted in proportion to its importance in commerce. Moreover the base is changed from an average of prices for the period 1890-1899 to the aggregate of values for the single year 1914. A simple illustration will explain the difference better than words. Suppose we have given the following data:

¹ Bulletin of the United States Bureau of Labor Statistics, No. 173, pp. 25-26.

Commodity	Unit	Price			Quantity Exchanged in 1909 000,000 Omitted
		Average 1890-1899	1910	1914	
Cotton	Pound	\$0.08	\$0.15	\$0.12	3,500
Hay	Ton	10.40	17.25	15.70	11
Wheat	Bushel	.75	1.10	1.04	27

OLD METHOD

Commodity	Price 1890-1899	Relative	Price 1910	Relative
Cotton	\$0.08	100	\$0.15	187.5
Hay	10.40	100	17.25	165.9
Wheat . . . . .	.75	100	1.10	146.6
	—	3)300	—	3)500.0
		100		166.7

Index number for 1910, 166.7.

NEW METHOD

Commodity	Total Exchange Value in	
	1914	1910
Cotton	(3,500 × .12) \$420.00	(3,500 × .15) \$525.00
Hay	(11 × 15.7) 172.70	(11 × 17.25) 189.75
Wheat	(27 × 1.04) 28.08	(27 × 1.10) 29.70
	\$620.78	\$744.45

000,000 omitted in above aggregate.

620.78 : 744.45 = 100 : 119.9.

Index number for 1910, 119.9.

As the above index numbers are computed to a different base they cannot be compared. For purposes of comparison, however, tables are published (Bulletin No. 181, pp. 12-16) in which, in parallel columns, index numbers to each base are reduced to terms of the other.

In what respects is the new system to be preferred to the old? The advantage of the weighted average in that it makes allowance for the difference in importance of commodities, and the objection to the arithmetic mean, that it gives to extreme variations in the prices of a few commodities undue influence in determining the index number, have been generally recognized. It is this objection that has led some statisticians to prefer the geometric mean or the median. The new method of the Bureau, however, is open to the same objection on this score as the arithmetic mean. Since the weighting for each commodity (the quantity exchanged in 1909) is constant throughout the whole series of index numbers, extreme variations in price multiplied by constant multipliers affect the aggregates in much the same way that the same variations would affect the relatives. Indeed, if the commodity affected with the extreme variation be also one having a very large volume of sales the effect on the index number will be even greater. But perhaps the very fact of the weighting justifies the effect on the index number. If a commodity which is very much in demand rises sharply in price, then even tho it be only a single commodity people really are forced to pay more for their usual satisfactions and the index number should show this fact.

It was noted in the last paragraph that the weighting for each commodity remains constant throughout the series. As the theory of the compiler is that the most satisfactory table of index numbers for general use is one which will show how much a typical person will be forced to pay for "the same bill of goods" from year to year, this could not well be otherwise. But it raises a question. For how long a period is the same weighting to be retained? And when the weighting is changed, how is the series of index numbers based upon one weighting to be adjusted to the series based upon another? Clearly, with new inventions constantly springing up, and with frequent changes in tastes and fashions, commodities change in their relative importance as well as in their prices. Sooner or later some method of "splicing" will become imperative. The difficulty is by no means insuperable;

indeed, methods of "splicing" when new commodities are added or old ones dropped are discussed in the paper, but this particular problem is somewhat different and will ultimately have to be faced.

One advantage of the new system is that the series can, if desired, be quickly changed to a new base. The index numbers in former issues of the Bulletin were computed to a fixed base, namely, the average of prices from 1890 to 1899. But we do not so often care to know how prices today compare with prices in the 90's as how they compare with the prices of three or four years ago, and in what direction and to what extent they are changing now. With the new tables, whatever be the base, the index numbers can be easily and accurately adjusted to any other base by simply dividing each of the index numbers (multiplied by 100) by the index number corresponding with the new base. For example, the index numbers for the decade 1900-09 to the base 1914 (100) are

1900	1901	1902	1903	1904	1905	1906	1907	1908	1909
81	80	86	86	87	86	89	95	92	98

If it is desired to reduce these index numbers to the base 1900 (100) we should multiply each by 100 and divide the products by 81,

1900	1901	1902	1903	1904	1905	1906	1907	1908	1909
100	99	106	106	107	106	110	117	114	121

But this process applied to a series of index numbers computed from a simple average of relatives does not lead to accurate results. In strict accuracy it is necessary to recompute all the relatives separately to the new base.¹

¹ Old method (average of relatives)

Let n equal the number of commodities and $p_1, p_2, p_3, \text{etc.}$, be their prices in any given year, say, 1910, and $P_1, P_2, P_3, \text{etc.}$, be the prices for the same commodities in the base year, say, 1890. Then (1) $\frac{100}{n} \left[\frac{p_1}{P_1} + \frac{p_2}{P_2} + \dots \right]$ will be the index numbers for 1910. By the same reasoning, when $\pi_1, \pi_2, \pi_3, \text{etc.}$, are the prices in 1912, (2) $\frac{100}{n} \left[\frac{\pi_1}{P_1} + \frac{\pi_2}{P_2} + \dots \right]$ will be the index number for 1912. Again, by the same reasoning, if it is desired to compute the index number for 1912 to the base 1910, we

One interesting point made by Dr. Mitchell deserves notice in this connection. It is claimed that a series of index numbers computed to a fixed base becomes progressively untrustworthy in proportion as the dates for which the index numbers are computed become more and more remote from the date of the base, and that for this reason chain-index numbers, that is, index numbers in which each year is successively taken as a base in computing the index number for the next year, are more reliable. The reason for this is that if we compare prices on successive years the great mass of the prices will exhibit only a slight change, there will be an obvious central tendency up or down with comparatively few extreme variations either of increase or decrease; whereas, if we compare prices separated by a long interval of time the extreme variations become more and more numerous and the central tendency less decisive. This point is developed with considerable mathematical detail through the use of decils and normal probability curves and the contention is undoubtedly made good that prices at a remote interval of time from the fixed base show a much greater scattering than those in adjacent years. But are the index numbers derived from them therefore more untrustworthy? If in the course of twenty years the price of wheat has advanced thirty per cent and the price of linen has fallen twenty per cent is the index number showing a rise of prices any less to be relied on than

shall have (3) $\frac{100}{n} \left[\frac{p_1}{p_0} + \frac{p_2}{p_0} + \dots \right]$. But a moment's inspection of the above formulae shows that (3) cannot be obtained by dividing (2), multiplied by 100, by (1), as would be the case if the reduction could be made as above.

New Method (Aggregates)

Using the same symbols, with the addition that, q_1, q_2, q_3 , etc., represent the quantities exchanged, we have

$$(1) \frac{100 (q_1 p_1 + q_2 p_2 + \dots)}{q_1 p_1 + q_2 p_2 + \dots} = \text{index number for 1910, base 1890 (100)}$$

$$(2) \frac{100 (q_1 p_1 + q_2 p_2 + \dots)}{q_1 p_1 + q_2 p_2 + \dots} = \text{index number for 1912, base 1890 (100)}$$

$$(3) \frac{100 (q_1 p_1 + q_2 p_2 + \dots)}{q_1 p_1 + q_2 p_2 + \dots} = \text{index number for 1912, base 1910 (100)}$$

But (3) is obviously equal to (2), multiplied by 100, \div (1).

would be an index number derived from a three per cent rise and two per cent fall of the corresponding commodities in adjacent years? If so, we are confronted with a curious paradox. If the mere fact that prices tend to become scattering with the lapse of time tends to cast suspicion on index numbers irrespective of the method of computation, then this defect should attach to the method of aggregates as well as to the method of relatives. For if prices become scattering after the lapse of time so also will weighted prices. Now suppose that taking 1890 as a base we compute by the new method index numbers for 1910 and 1911. By the reasoning just given these index numbers should be untrustworthy. But as was shown on page 802 we can accurately compute the 1911 index number to the 1910 base by the simple division of the 1911 index number (multiplied by 100) to the 1890 base by the index number for 1910 to the same base. That is, by dividing one unreliable index number by another we get a reliable index number!

It has been impossible in the space of this review to cover more than a few of the points touched upon by Dr. Mitchell in his admirable paper. It deserves to be carefully read by all students of the problems of index numbers and by all persons who have occasion to use them. As touching the merits of the new tables¹ it may be well to sum up the advantages claimed for them in Dr. Mitchell's own words.

The technical difficulties attending the construction of index numbers made of actual prices, then, can be surmounted. Offsetting these difficulties are numerous and substantial advantages. Aggregates of money prices weighted according to the importance of the several articles are as easy to understand as arithmetic means of relative prices. They are less laborious to compute than any other form of weighted series, for no relative prices are used; the original quotations are multiplied directly by the physical quantities used as weights, and the products added together. They are not tied to a single base period; but from them relative prices can quickly be made upon the chain system or any fixed base that is desired, and

¹ The aggregates, however, are not published. The tables include index numbers derived from the aggregates, and prices and weightings from which the aggregates may be derived.

these relative prices themselves can be shifted about at will as readily as geometric means. Hence they are capable of giving direct comparisons between prices on any two dates in which the investigator happens to be interested. Hence, also, they can be compared with any index numbers covering the same years, on whatever base the latter are computed. Their meaning is perfectly definite — which is not always true of medians. They cannot be made to give apparently inconsistent results like arithmetic means. When published as sums of money, they can be added, subtracted, multiplied, divided, or averaged in any way that is convenient. When weighted on a sound system, they cannot be unduly distorted by a very great advance in the price of a few articles, and yet, unlike medians, they allow every change in the price of every article to influence the result. . . .

In addition to the advantages peculiar to themselves, aggregates of actual prices can readily be given all the advantages claimed for weighted arithmetic means of relative prices. This combination of qualities makes them the most desirable type of general-purpose index numbers.¹

P. G. WRIGHT.

¹ Bulletin of the United States Bureau of Labor Statistics, pp. 91, 93.

NOTES AND MEMORANDA

CAN THE FARMER REALIZE HIGHER PRICES FOR HIS CROPS BY HOLDING THEM ?

THERE is a widespread belief that farmers suffer serious loss from having to throw their crops on the market immediately after the harvest and that some adequate provision should be made for lending the farmer money on the security of his harvested crops — chiefly grain or cotton — so that he would not be forced to dispose of them on a glutted market at unfavorable prices.¹ The necessity for providing credit to enable farmers to store their products has been a favorite argument in the rural credit agitation of the past three or four years, and an attempt has been made by the Federal Reserve Board to satisfy this demand through its act of September 3, 1915. This act made provision for a new form of paper, known as commodity paper, which should bear a preferential rate of interest on condition that the local bank should not charge the farmer more than 6 per cent. It was provided that "notes secured by non-perishable staple commodities, having a specified date of maturity, and upon which member banks had not charged a rate of interest or discount, including all commissions, of more than 6 per cent per annum, should be eligible for rediscount in Federal Reserve Banks at a

¹ The statement of the Dallas Federal Reserve agent is typical. After calling attention to the fact that Texas has gathered the largest yield of oats ever known in the state and that nevertheless the price has fallen, he says: "The farmer grows his crop, and having no place to care for it, throws it on the market at any price it will bring. In this connection the bankers of the State are undertaking an aggressive campaign to secure the erection of warehouses. While this is primarily aimed in the interest of cotton, the lesson ought to hold in general." Federal Reserve Board Bulletin, July, 1915, p. 162.

preferential rate."¹ While this provision for commodity paper was to apply to all staple products, such as corn, sugar and wool, its application has been confined almost wholly to cotton. By the end of the year commodity paper had been issued to the amount of \$10,300,000, of which \$7,500,000 was still outstanding.² In this connection it is interesting to note that in comparison with the value of the cotton crop the amount of paper issued is a mere bagatelle. The argument for such loans rests upon two assumptions; first, that the ordinary credit machinery is either defective or inadequate to meet the legitimate demands of the farmer who wishes to borrow on his products, and second, that owing to this fact the American farmer is suffering severe losses. While I am of the opinion that the first of these assumptions is unwarranted, I wish to confine this brief discussion to the second — namely, that the farmer suffers loss from having to market his crop immediately after the harvest is garnered.

Agricultural products fall into two groups, those which are bought and sold speculatively and those which, owing to their perishable nature or their incapacity to be standardized, are not so bought and sold.³ I shall consider in succession several products of the first class, namely, wheat, corn, oats and cotton, seeking in each case an answer to the question — will it be more profitable for the farmer to sell his crop when it is ready for the market, or to store it and hold it for better prices?

Crops cannot be held by the farmer without cost. The elements of this carrying cost vary among crops

¹ Second Annual Report, Federal Reserve Board, p. 7.

² *Ibid.*, p. 8.

³ It may be well to call attention to the fact that the prices of many farm products, besides those bought and sold on the exchange, are influenced by speculation. Eggs, apples, lean cattle, sheep, and dairy products may be mentioned as examples.

and among farmers, and there is likely to be a difference of opinion among students of the problem as to its amount. As a rule the farmer can market his products cheapest as soon as they are ready for the market, when for instance, as is oftentimes the case, his grain can be delivered to the elevator from the machine; and thus handling and storage charges are minimized and waste is avoided, and in the case of certain products the loss from deterioration and shrinkage during storage is prevented. To the elements of the carrying cost indicated, insurance and interest must be added. Owing to wide variation in some of these elements, it has been thought best, in order to give the holding farmer the benefit of the doubt, to leave them out of account. For example, no charge is made for insurance, for extra handling, or for extra cost of hauling to market due to bad roads or to the hauling having to be done at the time when the farmer is busy in the field. In the case of grain, it is assumed that the farmer stores it himself, and as he must have the bins whether he holds the crop or not, no charge is made for storage.¹ In the case of cotton, however, conditions are different and the usual warehouse charges, amounting to fifty cents per bale for the first month and after that to twenty-five cents per month, are made. In the case of oats and wheat, shrinkage is not heavy, and this item, together with waste in handling, is assumed to be 6 per cent and is distributed over the first six months of holding the grain. In the case of corn, the shrinkage is very heavy and varies from month to month throughout the year,² and it is esti-

¹ Since writing this statement the writer has made an automobile trip from Washington, D.C., to Central Montana, stopping with farmers en route. His observations convince him that storage charges are a very important element of expense in the holding costs, particularly in the newer states, Minnesota and the Dakotas for example. In South Dakota storage up to July 1, had in many cases amounted to eight cents per bushel.

² It is estimated that the shrinkage up to December is 6.9 per cent; January, 7.5 per cent; February, 7.8 per cent; March, 9.7 per cent; April, 12.8 per cent; May, 14.7

mated that for the first ten months it amounts to 18.2 per cent and that for the last two months its amount is negligible. It is assumed that cotton undergoes no shrinkage in storage. In all cases the rate of interest is assumed to be 6 per cent per year and is figured on the price of the commodity at the date when it is assumed to have been ready for the market, or, in other words, at the beginning of the storage period.¹

On the assumption that the movement of prices for ten years is an adequate basis for discussion, the grain prices have been secured by taking the ten year average of the monthly high and low selling prices on the Chicago market; and the price of cotton has been determined by taking the ten year average of the high and low selling prices for twenty-eight interior towns in the United States. No attempt is made to give the total amount of a commodity thrown on the market during a given month, but, in the case of grain, it is assumed that the relative amount can be determined by the amount put upon certain principal markets; namely, Chicago and Minneapolis in the case of wheat, and Chicago in the case of oats and corn, while for cotton the amount delivered at twenty-eight interior towns is taken.

It is apparent that in a country as large as the United States all of a given commodity is not ready for the market at the same time, and the date on which the farmer may sell his crop must be more or less arbitrarily assumed; but if the movement throughout the year be kept in view the date chosen as a basis for comparisons cannot materially affect conclusions. The date taken for wheat and oats is August; for corn, December; and

per cent; June, 16.2 per cent; July, 17.3 per cent; August, 17.8 per cent; September, 18.2 per cent. (Unpublished monograph on the Marketing of Farm Products, Dr. H. W. Gilbertson.)

¹ The price taken is the wholesale market price, and not the price received by the farmer. It is evident that this somewhat exaggerates the interest charge.

for cotton, November. The average price on these respective dates and the average amount put on the market then are taken as bases for computing the relative prices and amounts for the other months of the year. For example, the average ten year price of cotton on November first, 11.8 cents, is used as a basis—100. The average ten year price on January first is 11.6 cents and the relative price on January first is 98, *i. e.*, 11.6 divided by 11.8 and the result multiplied by 100. For movement the ten year average amount delivered on November first, 1,275,500 bales, is used as a basis—100, and the relative amount on January first, (628,700 bales) is found to be 49. The price on a given date less the carrying charges to that date represents the net selling price, and the difference between this net selling price and the price at the beginning of storage represents the farmer's gain or loss from holding.

The conclusions are drawn from the statistics in the following tables which summarize the more detailed tables appended to this paper. The first table shows the relative average monthly receipts and selling price (per

TABLE I.—WHEAT

	Average Monthly Price for Ten Year Period (Cents)	Relative Average Monthly Price for Ten Year Period	Relative Average Monthly Price if Held	Relative Average Monthly Receipts for Ten Year Period
August.....	104.5	100	100	100
September.....	101.0	97	95	132
October.....	100.4	96	93	128
November.....	97.5	93	89 +	116
December.....	98.4	94	88	101
January.....	102.8	98 +	91	75
February.....	102.2	98	89 +	65
March.....	100.8	96 +	87 +	75
April.....	100.9	96 +	87	53
May.....	103.4	99	88	52
June.....	105.3	101	90	45
July.....	107.4	103	91 +	70

bushel) of wheat, and relative average monthly price if held, during the ten year period, 1903-12.

In the preceding table it is seen that the maximum selling price of wheat is reached in July, when it is relatively three points higher than in the preceding August, or \$1.074 as compared with \$1.045, a difference of 2.9 cents; that is, if it had cost the farmer nothing to carry his wheat and if he sold it at the high point, he would have gained 2.9 cents per bushel; but since carrying charges up to July first were twelve cents per bushel, the farmer would have actually lost 9.1 cents by holding. Moreover, there were only two months out of the eleven in which wheat sold at a higher price than at the time it was ready to go on the market; and if carrying charges be taken into account, it will be seen that if the farmer had sold his wheat in either one of these months he would have lost by holding.

If, on the other hand, we take the selling price in September, \$1.01, as the basis, on the supposition that the crop was not ready for the market until then, we find the maximum selling price, in July, relatively six points higher, or \$1.074 as compared with \$1.01, a difference of 6.4 cents; that is, if it had cost nothing for the farmer to carry the wheat and if he sold it at the high point, he would have gained 6.4 cents per bushel; but since carrying charges up to July first were eleven cents per bushel, the farmer would have actually lost 4.6 cents by holding. Moreover, although there were six of the twelve months in which wheat sold at a higher price than in September, yet if carrying charges be taken into account it will be seen that if the farmer had sold his wheat in any one of these months he would have sustained a loss from the holding.

A second table similarly prepared shows the relative average monthly receipts and selling price (per bushel)

of oats, and relative average monthly price if held, during the ten year period, 1903-12.

It is evident from this table that the maximum selling price of oats is reached in June, when it is relatively sixteen points higher than the selling price of the preceding August, or 43.5 cents as compared with 37.6 cents, a difference of 5.9 cents; that is, if it had cost nothing for the farmer to carry the oats and if he sold at the high point, he would have gained 5.9 cents per

TABLE II. — OATS

	Average Monthly Price for Ten Year Period (Cents)	Relative Average Monthly Price for Ten Year Period	Relative Average Monthly Price if Held	Relative Average Monthly Receipts for Ten Year Period
August.....	37.6	100	100	100
September.....	38.4	102 +	101	78
October.....	37.6	100	97	84
November.....	37.4	99	95	59
December.....	38.8	103	97	51
January.....	39.5	105	98	55
February.....	41.0	109	100	51
March.....	41.1	109 +	100 -	66
April.....	41.7	111	101	50
May.....	43.4	115	105	58
June.....	43.5	116	105 -	61
July.....	42.9	114	102	47

bushel; but since carrying charges up to June first were 4.2 cents per bushel, in reality the farmer would have made only 1.7 cents by holding. An examination of the table shows that in all but two of the eleven months oats sold at a higher price than at the time the crop was ready for the market; but if carrying charges be taken into account it will be seen that if the farmer had sold his oats in any one of five of the eleven months, he would have lost by the holding.

Table III shows likewise for corn the relative average monthly receipts and selling price (per bushel), and

relative average monthly price if held, during the ten year period, 1903-12.

The figures demonstrate that the maximum selling price of corn is reached in August, when it is relatively twenty-one points higher than the selling price in the previous December, or 64.2 cents as compared with 52.9 cents, a difference of 11.3 cents; that is, if it had cost nothing for the farmer to carry his corn and if he sold it at the high point, he would have gained 11.3

TABLE III. — CORN

	Average Monthly Price for Ten Year Period (Cents)	Relative Average Monthly Price for Ten Year Period	Relative Average Monthly Price if Held	Relative Average Monthly Receipts for Ten Year Period
December.....	52.9	100	100	100
January.....	51.7	98	90	105
February.....	53.0	100 +	92	99
March.....	54.5	103	94	87
April.....	57.1	108	96	51
May.....	60.6	115	99	53
June.....	61.2	116	98 +	120
July.....	61.7	117	97	63
August.....	64.2	121	100 +	59
September.....	63.4	120	98	114
October.....	60.3	114	91	54
November.....	58.4	110	87	58

cents per bushel; but since the carrying charges up to August first were 11.2 cents per bushel, there was no gain from the holding. The table shows that in all but one of the eleven months corn sold at a higher price than at the time it was ready for the market; but if carrying charges be taken into account, it will be seen that if the farmer had sold his corn in any month except one he would have lost by the holding, and in that one month he would have about broken even.

A similar table for cotton shows the relative average monthly receipts, and selling price (per pound), and

relative average monthly price if held, during the ten year period, 1904-13.

The table indicates that the maximum selling price of cotton is reached in July, when it is relatively seven points higher than the selling price in the preceding November, or 12.6 cents as compared with 11.8 cents, a difference of $\frac{8}{10}$ cents; that is, if it had cost nothing for the farmer to carry his cotton and if he sold at the high point, he would have gained $\frac{8}{10}$ cents per pound;

TABLE IV. — COTTON

	Average Monthly Price for Ten Year Period (Cents)	Relative Average Monthly Price for Ten Year Period	Relative Average Monthly Price if Held	Relative Average Monthly Receipts for Ten Year Period
November	11.8	100	100	100
December	11.8	100	98	83
January	11.6	98	96	49
February	11.6	98	95	34
March	11.7	99	95	29
April	11.8	100	95	19
May	12.3	104	98	13 +
June	12.4	105	98	8
July	12.6	107	99	6
August	12.3	104	..	13
September	11.8	100	..	47
October	11.6	98	..	91

but since carrying charges up to July first were $\frac{9}{10}$ cents per pound, the farmer actually lost $\frac{1}{10}$ cents per pound by holding. Examination of the table shows that in only three out of the eight months cotton sold at a higher price than at the time it was ready for the market; and if carrying charges be taken into account, it will be seen that if the farmer had sold in any one of the eight months he would have lost by the holding.

But it is urged that the ten year average is not significant and that of more importance are the yearly fluctuations of which the farmer can take advantage. For

TABLE V.—GAIN OR LOSS PER BUSHEL BY HOLDING WHEAT AND SELLING IN THE MONTHS SPECIFIED, 1903-1904 TO 1912-1913, AND AVERAGE GAIN OR LOSS DURING THE TEN YEAR PERIOD

	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July
	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)
1903-04:												
Selling price.....	83.8	86.3	82.4	81.0	82.4	87.4	98.0	92.3	91.2	94.6	96.0	100.5
Cost of holding.....	...	1.26	2.52	3.78	5.04	6.30	7.56	7.98	8.40	8.82	9.24	9.66
Net selling price.....	...	85.0	79.9	77.2	77.4	81.1	90.4	85.3	82.8	85.8	86.8	90.8
Profit (+) or loss (-).....	...	+1.2	-3.9	-6.6	-6.4	-2.7	+6.6	+1.5	-1.0	+2.0	+3.0	+7.0
1904-05:												
Selling price.....	111.0	119.0	118.5	117.5	118.5	119.5	119.5	115.4	103.3	101.6	113.7	116.0
Cost of holding.....	...	1.67	3.34	4.01	6.68	8.35	10.02	10.58	11.14	11.70	12.26	12.82
Net selling price.....	...	117.3	115.2	113.5	111.8	111.1	109.5	104.8	92.2	89.9	101.4	103.2
Profit (+) or loss (-).....	...	+6.3	+4.2	+2.5	+8	+1	-1.5	-6.2	-18.8	-21.1	-9.6	-7.8
1905-06:												
Selling price.....	109.0	91.5	89.1	88.5	86.3	83.3	81.4	77.0	80.3	83.8	83.7	79.9
Cost of holding.....	...	1.04	3.26	4.02	6.56	8.20	9.84	10.39	10.94	11.49	12.04	12.69
Net selling price.....	...	89.9	85.8	83.6	79.7	75.1	71.6	66.6	69.4	72.3	71.7	67.3
Profit (+) or loss (-).....	...	-19.1	-23.3	-26.4	-29.3	-33.9	-37.4	-42.4	-28.6	-36.7	-37.3	-41.7
1906-1907:												
Selling price.....	75.7	78.0	72.4	72.9	73.8	...	84.5	82.8	83.5	95.0	101.5	103.3
Cost of holding.....	...	1.14	2.28	3.42	4.56	...	6.84	7.22	7.60	7.98	8.36	8.74
Net selling price.....	...	76.9	70.1	69.5	69.2	...	77.7	75.6	75.9	87.0	93.1	94.6
Profit (+) or loss (-).....	...	+1.2	-5.6	-6.2	-6.5	...	+2.0	...	...	+11.3	+17.4	+18.9
1907-08:												
Selling price.....	99.0	103.5	115.0	...	...	...	...	106.5	106.0	...	109.5	117.0
Cost of holding.....	...	1.49	2.98	...	...	...	...	9.44	9.44	...	10.94	11.44
Net selling price.....	...	107.0	112.0	...	...	...	...	97.1	96.1	...	98.6	105.6
Profit (+) or loss (-).....	...	+8.0	+13.0	...	...	...	...	-1.9	-2.9	...	...	+6.6

1902-09:	Selling price.....	116.0	107.0	108.0	107.0	102.3	109.3	115.8	117.4	125.1	131.8	132.5	133.3
	Cost of holding.....	...	1.74	3.48	5.22	6.98	8.70	10.44	11.02	11.60	12.18	12.76	13.24
	Net selling price.....	...	105.3	101.5	101.8	102.3	100.5	105.4	106.4	113.5	119.6	119.7	120.0
	Profit (+) or loss (-)....	...	-10.7	-14.5	-14.2	-13.7	-15.4	-10.6	-9.6	-2.5	+3.6	+3.7	+4.0
1909-10:	Selling price.....	120.3	105.5	106.4	107.5	112.9	113.7	115.2	115.9	113.8	109.6	107.0	120.3
	Cost of holding.....	...	1.80	3.60	5.40	7.20	9.00	10.80	11.40	12.00	12.60	13.20	13.80
	Net selling price.....	...	103.7	102.8	102.2	105.7	104.7	104.4	104.5	101.6	97.0	93.8	106.5
	Profit (+) or loss (-)....	...	-16.6	-17.5	-18.1	-14.6	-15.6	-15.9	-15.3	-18.7	-23.3	-26.5	-13.8
1910-11:	Selling price.....	121.3	114.0	108.5	105.0	107.0	107.5	102.0	98.5	98.5	102.0	98.5	101.0
	Cost of holding.....	...	1.82	3.64	5.46	7.28	9.10	10.92	11.54	12.16	12.76	13.37	13.98
	Net selling price.....	...	112.2	104.9	99.5	99.7	98.4	91.1	87.0	86.3	89.2	85.1	87.0
	Profit (+) or loss (-)....	...	-9.1	-16.4	-21.8	-21.6	-22.9	-30.2	-34.3	-35.0	-32.1	-36.2	-34.3
1911-12:	Selling price.....	105.5	106.5	112.5	109.5	107.5	110.5	111.5	111.5	115.0	118.5	116.5	110.5
	Cost of holding.....	...	1.59	3.18	4.77	6.36	7.95	9.54	10.07	10.60	11.13	11.66	12.19
	Net selling price.....	...	104.4	109.3	104.7	101.1	102.5	102.0	101.4	104.4	107.4	104.8	98.3
	Profit (+) or loss (-)....	...	-1.1	+3.3	-.8	-4.4	-2.0	-3.5	-4.1	-1.1	+1.9	-.7	-7.2
1912-13:	Selling price.....	103.0	93.8	94.0	88.5	87.9	90.8	92.3	89.9	92.8	93.3	93.8	91.8
	Cost of holding.....	...	1.55	3.10	4.65	6.20	7.75	9.30	9.82	10.34	10.86	11.38	11.90
	Net selling price.....	...	92.3	90.9	83.8	81.7	83.0	83.0	80.1	82.5	82.4	82.4	79.9
	Profit (+) or loss (-)....	...	-10.8	-12.1	-19.3	-21.3	-20.0	-20.0	-22.9	-20.5	-20.6	-20.6	-22.1
Total average:	Selling price.....	104.5	101.0	100.4	97.5	98.4	102.8	102.3	100.8	100.9	103.4	105.3	107.4
	Cost of holding.....	...	1.57	3.14	4.71	6.28	7.83	9.42	9.94	10.46	10.98	11.50	12.02
	Net selling price.....	...	99.4	97.3	92.8	92.1	94.9	92.8	90.4	90.4	92.4	93.8	95.4
	Profit (+) or loss (-)....	...	-5.1	-7.3	-11.7	-12.4	-9.6	-11.7	-13.6	-14.1	-12.1	-10.7	-9.1

example, Mr. Harding, of the Federal Reserve Board, while disclaiming to give any advice on the matter of holding cotton, says: "I wish to call attention to the fact that cotton is a commodity which has always shown itself susceptible to marked and sudden fluctuations in value";¹ and he goes on to infer that, owing to this fact, it should be to the farmer's advantage to hold his cotton in order to take advantage of such fluctuations. He assumes that under prevailing conditions cotton is thrown on the market in such quantities as to cause congestion, and adds that the provision of the Federal Reserve Board will permit more orderly methods in marketing the crop. To quote, "I am convinced that the results of a gradual marketing of the crop this season will be far more satisfactory than would be the case were the crop forced upon the market within a short period."²

In order to show just what the monthly fluctuations are and what they mean to the farmer, the following tables have been prepared. These tables state for each of the four commodities the monthly selling prices for a

¹ It is worth while to give Mr. Harding's statement in full. After speaking about the possibility of holding cotton, he says: "These are matters for individual judgment but I wish to call attention to the fact that cotton is a commodity which has always shown itself susceptible to marked and sudden fluctuations in value. As a case in point, I may cite the twelve calendar years, 1904-14, both inclusive. In one of these years, 1904, the difference between the high and low point in the price of cotton was 10.41 cents per pound, or more than \$50 per bale (according to official quotations on the New York Cotton Exchange). The least range in values occurred in the year 1906 in extreme fluctuations of 2.65 cents per pound, or about \$13 a bale, and the average annual fluctuation during the entire period of twelve years has been 5.38 cents per pound, or about \$27 per bale."

Mr. Harding's statistics are hardly accurate. In the first place, in comparing the lowest price for December, 1904, with the highest price for March of the same year, he has not only committed the inaccuracy of comparing the high of one month with the low of another, but has also made the very serious error of not confining his statistics to one crop. The real difference in price for the year should not have been 10.4 cents but, as given in our table, 3.9 cents; and even if we take the highest and lowest price of the year 1904 for the same crop, we find a difference of 4.8 cents. Mr. Harding has made the same error in his statistics for the year 1906. (Federal Reserve Board Bulletin, September, 1915, p. 225.)

² Federal Reserve Board Bulletin, September, 1915, p. 225.

ten year period, the cost of carrying, the net selling price (selling price less cost of carrying), and if carried after being ready for market, the monthly profit or loss to the farmer after the carrying charges have been met.

Table V (see pages 814-815) shows the actual gain or loss per bushel by holding wheat and selling in any month after August during each year 1903-04 to 1912-13, and the average monthly gain or loss during the ten year period.

It is clear from this table that if the farmer had held his wheat from August, 1903, until the following November, he would have lost seven cents per bushel, but if he had held it until either February or July, 1904, he would have made a profit of the same amount. It is also seen that during four of the ten years there was no month in which the farmer could have sold at a profit from holding, but that in each month during these years he would have sustained a loss of from nine to forty-two cents per bushel; also that during the remaining six years there were only from two to six months in which he could have sold at a profit, varying from one to nineteen cents, from holding. During all the one hundred and ten months of the ten years there were only twenty-three months in which he could have sold at a profit from holding. The figures for the ten year average show no gain in any month from the holding, and show losses ranging from five to fourteen cents.

It is to be remembered, moreover, that if we assume that the farmer will take advantage of the highest price each year, we assume him, unlike the average speculator, to be omniscient.

Table VI (see pages 818-819) shows the actual gain or loss per bushel by holding oats. By holding oats until either November, or December, 1903, instead of selling in the previous August, the farmer would have lost one

TABLE VI. — GAIN OR LOSS PER BUSHEL BY HOLDING OATS AND SELLING IN THE MONTHS SPECIFIED, 1903-1904 TO 1912-1913, AND AVERAGE GAIN OR LOSS DURING THE TEN YEAR PERIOD

	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July
	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)
1903-04:												
Selling price.....	35.2	36.8	36.5	35.9	36.1	39.0	42.7	40.4	39.0	42.2	41.0	41.8
Cost of holding.....	...	.53	1.06	1.50	2.12	2.05	3.18	3.36	3.54	3.72	3.90	4.08
Net selling price.....	...	36.3	35.4	34.3	34.0	36.3	39.5	37.0	35.5	38.5	37.1	37.7
Profit (+) or loss (-)....	...	+ 1.1	+ .2	- .9	- 1.2	+ 1.1	+ 4.3	+ 1.8	+ .3	+ 3.3	+ 1.9	+ 2.5
1904-1905:												
Selling price.....	35.8	31.6	29.9	30.6	30.1	30.2	30.9	31.3	30.2	30.3	31.8	30.6
Cost of holding.....	...	.54	1.08	1.62	2.16	2.70	3.24	3.40	3.58	3.76	3.94	4.12
Net selling price.....	...	31.1	28.8	29.0	27.9	27.5	27.7	27.9	26.6	26.5	27.9	26.5
Profit (+) or loss (-)....	...	- 4.7	- 7.0	- 6.8	- 7.9	- 8.3	- 8.1	- 7.9	- 9.2	- 9.3	- 7.9	- 9.3
1905-06:												
Selling price.....	27.4	27.5	29.1	30.2	31.1	30.8	30.1	29.8	31.8	32.4	38.3	34.8
Cost of holding.....	...	.41	.82	1.23	1.64	2.05	2.46	2.62	2.76	2.90	3.04	3.18
Net selling price.....	...	27.1	28.3	29.0	29.5	28.7	27.6	27.2	29.0	30.5	35.3	31.6
Profit (+) or loss (-)....	...	- .3	- .9	+ 1.5	+ 2.1	+ 1.3	+ .3	- .3	+ 1.5	+ 3.1	+ 7.9	+ 4.2
1906-07:												
Selling price.....	30.6	32.1	33.5	34.1	34.4	35.4	36.1	41.3	43.5	46.5	45.4	43.6
Cost of holding.....	...	.46	.92	1.35	1.84	2.20	2.76	2.89	3.04	3.19	3.24	3.49
Net selling price.....	...	31.6	32.6	32.7	32.6	33.1	33.3	38.4	40.5	43.3	42.1	40.1
Profit (+) or loss (-)....	...	+ 1.0	+ 2.0	+ 2.1	+ 2.0	+ 2.5	+ 5.7	+ 7.5	+ 9.9	+ 12.7	+ 11.5	+ 9.5
1907-08:												
Selling price.....	40.4	53.8	49.9	46.8	48.7	49.9	50.8	53.4	52.8	54.6	51.5	55.8
Cost of holding.....	...	.74	1.43	2.22	2.96	3.70	4.44	4.71	4.96	5.21	5.46	5.71
Net selling price.....	...	53.1	48.4	44.6	45.7	46.2	46.4	48.7	47.8	49.4	46.0	50.1
Profit (+) or loss (-)....	...	+ 3.7	- 1.0	- 4.8	- 3.7	- 3.3	- 3.0	- .7	- 1.6	...	- 3.4	+ .7

1908-09:	48.3	49.1	47.9	48.7	49.4	49.8	52.6	54.0	54.6	59.4	56.4	49.0
Selling price.....	...	...	...	...	...	...	...	...	...	...	...	...
Cost of holding.....	...	48.4	46.5	46.5	46.5	46.2	48.3	49.4	49.8	54.3	53.0	56.4
Net selling price.....	...	+	-1.8	-1.8	-1.8	-2.1	...	+	+	+	+	-4.3
Profit (+) or loss (-)....	...	...	...	...	...	...	...	...	...	...	...	...
1909-10:	39.8	42.9	36.8	39.1	47.5	46.5	47.6	45.1	42.5	39.9	37.6	41.6
Selling price.....	...	...	...	...	...	...	...	...	...	...	...	...
Cost of holding.....	...	...	1.20	1.80	2.40	3.00	3.60	3.79	3.99	4.19	4.39	4.50
Net selling price.....	...	42.3	35.6	37.3	45.1	43.5	44.0	41.3	39.5	35.7	33.2	37.0
Profit (+) or loss (-)....	...	+	-1.2	-2.5	+5.3	+3.7	+4.2	+1.5	-1.3	-4.1	-6.6	-2.8
1910-11:	35.8	32.9	31.2	31.2	31.8	31.6	30.6	29.7	30.8	33.9	39.6	42.6
Selling price.....	...	...	...	...	...	...	...	...	...	...	...	...
Cost of holding.....	...	...	1.08	1.62	2.16	2.70	3.24	3.40	3.58	3.76	3.94	4.12
Net selling price.....	...	32.4	30.2	29.6	29.6	28.9	27.4	26.3	27.2	30.1	35.7	38.5
Profit (+) or loss (-)....	...	-3.4	-5.6	-6.2	-6.2	-6.9	-8.4	-9.5	-8.5	-5.7	-1	+2.7
1911-12:	40.9	44.3	46.2	46.2	46.8	49.2	52.2	53.1	56.5	54.3	52.1	40.5
Selling price.....	...	...	...	...	...	...	...	...	...	...	...	...
Cost of holding.....	...	...	1.24	1.86	2.48	3.10	3.72	3.92	4.13	4.34	4.55	4.76
Net selling price.....	...	43.7	45.0	44.3	44.3	46.1	48.5	49.2	52.4	50.0	47.5	44.7
Profit (+) or loss (-)....	...	+	+4.1	+3.4	+3.4	+5.2	+7.6	+8.3	+11.5	+9.1	+6.6	+3.8
1912-13:	33.0	32.9	32.3	30.9	32.3	32.8	33.8	32.7	34.9	39.1	40.8	39.7
Selling price.....	...	...	...	...	...	...	...	...	...	...	...	...
Cost of holding.....	...	...	1.00	1.80	2.60	2.50	3.00	3.17	3.34	3.51	3.68	3.85
Net selling price.....	...	32.4	31.3	29.4	30.3	30.3	30.8	29.5	31.6	35.6	37.1	35.8
Profit (+) or loss (-)....	...	-	-1.7	-3.6	-2.7	-2.7	-2.3	-3.5	-1.4	+2.6	+4.1	+2.3
Total average:	37.6	38.4	37.6	37.4	38.8	39.5	41.0	41.1	41.7	43.4	43.5	42.9
Selling price.....	...	...	...	...	...	...	...	...	...	...	...	...
Cost of holding.....	...	...	1.14	1.71	2.28	2.85	3.42	3.61	3.80	3.99	4.18	4.37
Net selling price.....	...	37.8	36.5	35.7	36.5	36.6	37.6	37.5	37.9	39.4	39.3	38.5
Profit (+) or loss (-)....	...	+	-1.1	-1.9	-1.1	-1.0	...	-1	+	+1.8	+1.7	+

cent per bushel, and by holding until February, 1904, he would have gained four cents. If a similar comparison with the August selling price be made for each month of each of the ten years, it will be seen that there was one year in no month of which could the farmer have sold his oats at a profit from the holding, while there were two years in which there was no month in which he could not have sold at a profit from holding, and that during the seventy-seven months of the remaining seven years there were twenty-nine months in which there would have been gains from holding ranging from one to eight cents, while in the forty-eight remaining months there would have been losses from holding ranging from one to ten cents. The figures for the ten year average show three months in which the farmer would have gained from one to two cents per bushel, and four months in which he would have lost one to two cents, while in four months he would have broken even, by holding.

Table VII (see pages 822-823) shows the actual gain or loss per bushel by holding corn. This table indicates that by holding his corn until either March or June, 1904, instead of selling it the preceding December, the farmer would have made a profit of seven cents per bushel, and by holding until July he would have lost two cents per bushel. A comparison of the August selling price of each year with the other selling prices of that year shows that there were three of the ten years in which there was no month in which the farmer could have sold at a gain from holding, and that in from two to eight months of the remaining seven years he could have sold at a profit of from one to thirteen cents by holding. During all the one hundred and ten months of the ten years, there were only thirty-seven months in which a profit could have been made from the holding, while in

the remaining seventy-three months there would have been losses ranging from one to thirty-two cents per bushel. The figures for the ten year average show no month in which a profit could have been made from the holding, and ten months in which there would have been losses ranging from one to seven cents per bushel, and two months with neither profit nor loss.

Table VIII (see pages 824-825) shows the actual gain or loss per pound by holding cotton. It is apparent that if the farmer had held his cotton from November, 1904, to January, 1905, he would have lost 2.8 cents per pound by holding, and he would also have lost by holding if he had sold in any month up to July first, but if he had sold then he would have gained $\frac{1}{10}$ cents per pound; that is, if he had sold in any one of seven out of the eight months the farmer would have sustained losses by holding ranging from 1.2 to 2.8 cents per pound. There was one year of the ten during which there was no month in which the farmer could have sold his cotton without loss from having held it since November. During the entire eighty months of the ten years, there were twenty-four months in which he could have sold with a profit, ranging from $\frac{1}{10}$ to 2.4 cents, from holding, while had he sold in any one of the remaining fifty-six months he would have sustained a loss of from $\frac{1}{10}$ to 2.8 cents per pound by holding. The figures for the ten year average show no month in which the farmer could have sold without loss from holding.

A summary of the statistics shown in the preceding tables is given on page 826.

The much talked of congestion due to too rapid marketing of agricultural products is largely a myth in so far as the United States is concerned. This is prevented to a great extent by certain factors which no

TABLE VII. — GAIN OR LOSS PER BUSHEL BY HOLDING CORN AND SELLING IN THE MONTHS SPECIFIED, 1903-1904 TO 1912-1913, AND AVERAGE GAIN OR LOSS DURING THE TEN YEAR PERIOD

	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.
	(Cts.)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)
1903-04:												
Selling price.....	42.4	45.1	50.3	52.8	51.7	48.5	56.4	48.5	53.5	52.9	53.6	54.1
Cost of holding.....	...	3.14	3.60	3.94	4.05	6.48	7.49	8.34	9.02	9.44	9.82	10.03
Net selling price.....	...	42.0	46.7	48.9	46.7	42.1	48.9	40.3	44.5	43.5	43.8	44.1
Profit (+) or loss (-).....	...	-.4	+4.3	+6.5	+4.3	-.3	+6.5	-2.1	-2.1	+1.1	+1.4	+1.7
1904-05:												
Selling price.....	46.3	42.6	44.1	47.0	47.8	56.3	54.3	56.4	55.0	52.9	52.3	48.5
Cost of holding.....	...	3.42	3.93	4.30	5.41	7.08	8.19	9.11	9.85	10.31	10.72	10.95
Net selling price.....	...	39.2	40.2	42.7	42.4	49.2	46.1	47.3	45.1	42.6	41.6	37.5
Profit (+) or loss (-).....	...	-7.1	-6.1	-3.6	-3.9	+2.9	-.2	+1.0	-1.2	-3.7	-4.7	-8.8
1905-06:												
Selling price.....	46.1	42.0	43.4	41.5	45.8	48.8	52.4	51.4	49.8	48.5	46.0	45.6
Cost of holding.....	...	3.41	3.92	4.29	5.39	7.05	8.16	9.08	9.82	10.28	10.69	10.92
Net selling price.....	...	38.6	39.5	37.2	40.4	41.7	44.2	42.3	40.0	38.2	35.3	34.7
Profit (+) or loss (-).....	...	-7.5	-6.6	-8.9	-8.7	-4.4	-1.9	-3.8	-6.1	-7.9	-10.8	-11.4
1906-07:												
Selling price.....	43.0	41.6	43.6	44.0	47.5	52.5	53.1	53.6	57.8	62.1	61.1	56.5
Cost of holding.....	...	3.18	3.65	3.98	5.01	6.55	7.58	8.44	9.12	9.54	9.92	10.13
Net selling price.....	...	38.4	39.9	40.0	42.5	46.2	45.5	45.2	48.7	52.6	51.2	46.4
Profit (+) or loss (-).....	...	-4.6	-3.1	-2.0	-.5	+3.2	+2.5	+2.2	+3.7	+9.6	+8.2	+6.4
1907-08:												
Selling price.....	59.5	58.5	58.0	62.3	66.5	74.9	70.8	74.3	78.8	80.0	72.5	64.3
Cost of holding.....	...	4.41	5.06	5.54	6.97	9.12	10.55	11.74	12.60	13.29	13.83	14.13
Net selling price.....	...	54.1	52.9	56.8	59.5	65.8	60.2	62.6	66.2	66.7	58.7	50.2
Profit (+) or loss (-).....	...	-5.4	-6.6	-2.7	...	+6.3	+.7	+3.1	+6.6	+7.2	-.8	-9.3

1905-09:											
Selling price.....	59.5	59.5	65.8	60.5	74.1	74.3	71.1	68.3	66.4	60.5	62.9
Cost of holding.....	...	4.41	2.06	5.54	9.12	10.55	12.66	12.69	13.29	13.83	14.13
Net selling price.....	...	55.1	58.2	60.3	62.5	65.0	63.7	55.6	53.1	46.8	48.3
Profit (+) or loss (-)....	...	-4.4	-1.3	+8	+3.0	+5.5	+4.2	-1	-6.4	-12.8	-10.7
1909-10:											
Selling price.....	64.3	65.3	64.8	62.5	58.8	59.5	63.0	63.1	55.4	50.0	40.8
Cost of holding.....	...	4.76	5.46	5.98	7.52	9.33	11.37	12.66	14.33	14.90	15.22
Net selling price.....	...	60.5	59.3	56.5	55.3	49.7	50.3	49.4	41.1	35.1	34.6
Profit (+) or loss (-)....	...	-3.8	-5.0	-7.8	-13.0	-14.6	-16.7	-14.3	-23.2	-29.3	-29.7
1910-11:											
Selling price.....	47.8	46.0	46.8	46.8	49.6	53.8	56.4	63.4	67.3	72.3	72.5
Cost of holding.....	...	3.54	4.07	4.45	5.60	7.23	8.47	9.42	10.19	10.67	11.53
Net selling price.....	...	43.1	42.7	42.3	44.0	46.5	47.9	54.0	58.8	61.2	61.3
Profit (+) or loss (-)....	...	-4.7	-6.1	-5.5	-3.8	-1.3	+1	+6.2	+6.0	+8.8	+13.4
1911-12:											
Selling price.....	60.5	66.8	65.0	70.4	77.8	79.4	74.3	72.3	75.3	63.8	54.4
Cost of holding.....	...	5.15	5.91	6.47	8.14	10.65	12.32	13.71	14.82	15.52	16.15
Net selling price.....	...	61.6	59.1	63.9	69.7	68.7	62.0	58.6	63.5	58.1	47.6
Profit (+) or loss (-)....	...	-7.0	-10.4	-5.6	+2	-8	-7.5	-10.9	-6.0	-11.4	-21.9
1912-13:											
Selling price.....	50.8	48.5	50.3	51.8	55.5	57.6	60.6	63.3	73.4	74.8	72.6
Cost of holding.....	...	3.76	4.31	4.71	5.93	7.75	8.97	9.98	10.79	11.29	12.0
Net selling price.....	...	44.7	46.0	46.1	49.6	48.8	51.6	53.3	62.6	63.5	60.6
Profit (+) or loss (-)....	...	-6.1	-4.8	-4.7	-1.2	-2.0	+8	+2.5	+11.8	+12.7	+9.8
Total average:											
Selling price.....	52.9	51.7	53.0	54.5	57.1	60.6	61.2	61.7	64.2	63.4	58.4
Cost of holding.....	...	3.91	4.49	4.90	6.17	8.07	9.34	10.39	11.23	11.76	12.23
Net selling price.....	...	47.8	48.5	49.6	50.9	52.5	51.9	51.3	53.0	51.6	48.1
Profit (+) or loss (-)....	...	-5.1	-4.4	-3.3	-2.0	-4	-1.0	-1.6	+1	-1.3	-4.8

TABLE VIII.—GAIN OR LOSS PER POUND BY HOLDING COTTON AND SELLING IN THE MONTH AS SPECIFIED, 1904-1905
TO 1913-1914, 1915-1916, AND AVERAGE GAIN OR LOSS DURING THE TEN YEAR PERIOD

	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July
	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)
1904-05:											
Selling price.....	11.1	10.3	9.8	7.9	7.3	7.8	8.0	7.9	8.4	9.3	10.7
Carrying charges.....	...	...	...	.15	.25	.35	.45	.55	.65	.75	.85
Net selling price.....	...	...	...	7.8	7.0	7.5	7.6	7.4	7.8	8.6	9.9
Profit (+) or loss (-).....	...	...	...	-2.0	-2.3	-2.3	-2.2	-2.4	-2.0	-1.2	+ .1
1905-06:											
Selling price.....	10.9	10.3	11.5	12.1	11.8	11.1	11.4	11.7	11.7	11.1	10.9
Carrying charges.....	...	...	...	.16	.27	.38	.49	.60	.71	.82	.93
Net selling price.....	...	...	...	11.9	11.5	10.7	10.9	11.1	11.0	10.3	10.0
Profit (+) or loss (-).....	...	...	...	+ .4	...	-.8	-.6	-.4	-.5	-1.2	-1.5
1906-07:											
Selling price.....	9.8	10.8	10.8	10.9	10.9	11.1	11.2	11.2	12.2	13.0	13.2
Carrying charges.....	...	...	...	.15	.25	.35	.45	.55	.65	.75	.85
Net selling price.....	...	...	...	10.8	10.7	10.8	10.8	10.7	11.6	12.3	12.4
Profit (+) or loss (-).....	...	...	...	...	-.1	...	...	-.1	+.8	+1.5	+1.6
1907-08:											
Selling price.....	12.7	11.4	11.2	12.0	11.7	11.6	11.0	10.2	10.9	11.8	11.1
Carrying charges.....	...	...	...	.16	.27	.38	.49	.60	.71	.82	.93
Net selling price.....	...	...	...	11.8	11.4	11.2	10.5	9.6	9.2	11.0	10.2
Profit (+) or loss (-).....	...	...	...	+.6	+.3	...	-.7	-1.6	-2.0	-.3	-1.0
1908-09:											
Selling price.....	9.5	9.2	9.4	9.2	9.6	9.8	9.7	10.4	11.3	11.6	12.6
Carrying charges.....	...	...	...	.15	.25	.35	.45	.55	.65	.75	.85
Net selling price.....	...	...	...	9.1	9.4	9.5	9.3	9.9	10.7	10.9	11.8
Profit (+) or loss (-).....	...	...	...	-.3	...	+.1	-.1	+.6	+1.3	+1.6	+2.4

man-made regulations can get around. First of all, in a country as large as ours there is a wide variation in the crop season; our wheat harvesting, for example, begins in the southern part of the territory as early as June, while in the northern sections of the country it is in full swing in September. Furthermore, in regions in the same latitude winter wheat will be ready for harvest-

THE NUMBER OF MONTHS IN EACH SPECIFIED YEAR AND DURING THE TEN YEAR AVERAGE, THE FARMER, BY HOLDING HIS CROP, COULD HAVE SOLD AT A GAIN OR LOSS

Number of Months Could have Sold at a Gain or Loss	Wheat ¹			Corn ¹			Oats ¹			Cotton ²		
	gain	loss	even	gain	loss	even	gain	loss	even	gain	loss	even
1903-1904.....	6	5	..	8	1	2	7	2	..	..	..	..
1904-1905.....	4	6	1	2	8	1	..	11	..	1	7	..
1905-1906.....	11	..	..	..	11	..	7	1	3	1	6	1
1906-1907 ³	5	3	2	7	4	..	11	..	..	3	2	3
1907-1908 ⁴	3	2	1	5	5	1	2	8	1	2	5	1
1908-1909.....	3	8	..	4	6	1	4	5	2	5	2	1
1909-1910.....	..	11	..	..	11	..	5	6	..	3	4	1
1910-1911.....	..	11	..	5	5	1	1	9	1	1	6	1
1911-1912.....	2	9	..	..	10	1	11	..	..	6	2	..
1912-1913.....	..	11	..	6	5	..	3	8	..	2	5	1
1913-1914.....	..	..	..	..	..	..	..	..	..	..	3	..
Ten year average.....	..	11	..	..	9	2	3	4	4	..	8	..
1915-1916.....	..	..	..	..	..	..	..	..	..	1	6	..

ing earlier than the spring wheat, and in the same region the threshing period must extend over a considerable length of time. The exigencies of agriculture permit one farmer to thresh out of the shock and so get his grain ready for marketing weeks earlier than his neighbor who threshes out of the stack. In the case of such grains as corn and oats, an important steadying factor in marketing is the fact that in many cases it is only the

¹ Total months held, 11.

² Total months held, 8.

³ One month no quotation for wheat.

⁴ Five months no quotation for wheat.

farmer's surplus, after the demands of live stock have been met, which is placed on the market, and the amount of this surplus cannot be ascertained since it depends on weather conditions — for example, on the length and severity of the winter — and on whether the price of live stock in comparison with the price of grain makes it worth while to have a long or short feeding period. The marketing of wheat will also be materially affected by its price as compared with the prices of the grains usually grown for fodder. For example, it often happens that large quantities of wheat intended for human consumption are fed to stock owing to the relatively high price of corn.

The same general rules apply to cotton as to grain. Cotton picking begins in southern Texas in June, while in Georgia it is not in full swing until August; but not all the cotton in the same field is ready to harvest at the same time, and oftentimes there are three pickings, the first bolls opening in August and the last in December or even in January. Nor is it possible to gin all cotton as soon as picked, and so the ginning period extends over months.

Furthermore, the fact should not be lost sight of that there are many conditions in agriculture which make it necessary or economic for certain farmers to hold their products. Landlords, for example, have to wait on the convenience of tenants to deliver their grain to the elevator, and well-to-do farmers who have a surplus of funds and excellent storage facilities may think it worth while to hold their crops.

That nature and economic conditions which are largely beyond the control of man force the orderly marketing of crops will be easily seen by a study of the figures for relative average monthly receipts (see tables

I-IV). On the assumption that the monthly movements of wheat to Chicago and Minneapolis are indicative of the movements to all markets, it is seen that the marketing of wheat is fairly well distributed throughout the year. The average number of bushels delivered in August during the ten year period is 11,879,900, or 9.8 per cent of the total average delivery for the year; in September it is 15,658,300 bushels, or 12.9 per cent of the total delivery, and this is the maximum for any month. The months of small delivery are April, May and June, with percentages of 5.2, 5.1, and 4.4, respectively. In the case of oats the average number of bushels delivered in August is 12,377,800, or 13.2 per cent of the total average delivery for the year, and this is the maximum for any month. The months of small delivery are December, February, April and July, with percentages of 6.7, 6.7, 6.6 and 6.2, respectively. In the case of corn, the average number of bushels delivered in December is 10,949,900, or 10.4 per cent of the total average delivery for the year; in June it is 13,097,600, or 12.4 per cent of the total, and this is the maximum for any month. The months of small delivery are April, May, and October, with percentages of 5.3, 5.5, and 5.5, respectively. In the case of cotton the average number of bales delivered in October is 1,163,400, or 18.5 per cent of the total average delivery for the year; in November it is 1,275,500, or 20.3 per cent of the total, and this is the maximum for any month. The months of small delivery are August, May, June and July, with percentages of 2.6, 2.6, 1.6 and 1.2, respectively. The average number of bales of cotton ginned in October is 4,526,110, or 37.0 per cent of the total, and this is the maximum for any month; in November it is 2,737,399, or 22.4 per cent of the total. The

months of small ginnings are August and January, with percentages of 4.1 and 2.2, respectively.¹

I have purposely avoided any discussion of the rôle of the speculator in steadying prices, but I cannot refrain from suggesting that the function of the speculator is highly specialized and that the successful exercise of this important function demands intimate knowledge and rare ability such as, in the very nature of things, farmers cannot possess. Therefore to encourage speculation on the part of farmers by forcing the banks to loan them money below normal rates, under the guise of commodity paper, is a highly questionable proceeding.

Nor have I been sufficiently bold to suggest that it would be cheaper for the farmer who believes that the future holds higher prices to sell his product and buy an option. However, a South Dakota farmer not only made this suggestion, but had acted upon it. Last year he raised twelve thousand bushels of wheat, hauled it to market from the machine and bought an option with the proceeds. The trouble is that he still has the option and cannot make up his mind whether to sell it at a loss or to hold on. But this farmer is in no worse predicament than the Georgia planter who has commodity paper against his cotton pressing for payment and must sell at a loss in order to meet his obligation. Indeed, he is better off, because he has only interest to meet, while the Georgia farmer has interest and other carrying charges and is not in a position to take quick advantage of the market. And the one farmer is just as much a speculator as the other. There

¹ The average number of bales of cotton ginned during the ten year period, 1904-13, for August is 500,956; September, 2,927,469; October, 4,526,110; November, 2,737,399; December, 1,371,105; January, 268,456. (Census Bulletin 131, p. 14.) Taking the figure for November as a basis (100), the relative bales ginned are—August, 18; September, 107; October, 165; November, 100; December, 46; January, 10.

is still room for another uplift organization, and if the farmer is to be urged to launch his unpiloted boat upon the maelstrom of speculation, his advisors should organize themselves so as to be able to tell him when and how to get safely back to land.

In conclusion it will be interesting to say something about the effect of commodity paper on prices of agricultural products, particularly cotton. In its Second Annual Report, the Federal Reserve Board seems to take the position that the provision for this paper worked magic in that within sixty days after the act went into effect the price of cotton advanced from eight to twelve cents per pound. But since, as we have indicated, the amount of this commodity paper is a mere bagatelle, the Board states that the effect of the commodity paper regulation was mainly anticipatory and protective. A study of the economic situation during these two months must convince the most skeptical that the real cause was the active buying movement on the part of the English and of our own domestic spinners; and a study of the statistics of marketing will show that it was not more gradual and orderly during the autumn of 1915 than during any other autumn. The abnormally low price of cotton during September, 1915, was due, of course, to conditions growing out of the war. The bulk of the 1915 cotton crop was not ready for market until November, and at this time the price of cotton was 11.6 cents per pound. A glance at Table VIII shows that if the farmer had held his cotton and had attempted to dispose of it before June first, the time of this writing, he would have lost money, and that had he sold on June first he would have about broken even.

Statistics for outstanding commodity paper of all Federal Reserve Banks are not available, but through

the courtesy of the Federal Reserve Board statistics for the bank of Richmond are given here:

December 1, 1915	\$1,956,576.26
January 3, 1916	2,366,512.72
February 1, 1916	2,128,849.38
March 1, 1916	2,126,935.72
April 1, 1916	1,663,442.98
May 1, 1916	1,333,831.25
June 1, 1916	924,165.12

It is seen that the date on which the maximum amount was outstanding was January 3, 1916, when the average price of cotton was 11.1 cents per pound. Evidently the farmers who sold their cotton to liquidate this paper must have done so at a loss.¹

J. E. POPE.

BIG TIMBER, MONTANA.

¹ I wish to express my appreciation of the privilege accorded by Dr. H. W. Gilbertson, of the Department of Agriculture, of reading his unpublished monograph on The Marketing of Farm Products, submitted as a thesis to the faculty of the graduate school of Cornell University. Dr. Gilbertson comes to the same conclusions as the writer of this note. In this monograph Dr. Gilbertson has extended his study to other farm products, and he concludes that it will not pay the farmer, one year with another, to hold his potatoes, his hay or his apples.

AVERAGE MONTHLY PRICE OF WHEAT, CORN, OATS AND COTTON, 1903-1913¹

Month and Item	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	Average Monthly Price for Ten Year Period	Relative Average Monthly Price for Ten Year Period	Relative Average Monthly Price if Held
August:												(Cents)		
Wheat.....	83.8	111.0	109.0	75.7	99.0	116.0	120.3	121.3	105.5	103.0	91.9	104.5*	100	100 +
Corn.....	51.8	52.5	55.0	49.8	57.8	78.8	68.3	63.1	64.0	78.3	73.4	64.2*	121	100
Oats.....	35.2	35.8	27.4	30.6	49.4	48.3	39.8	35.8	40.9	33.0	40.8	37.6*	100	100
Cotton.....	...	11.1	10.9	10.4	13.3	10.2	12.8	17.5	12.4	12.3	12.3	12.3	104	...
September:														
Wheat.....	86.3	110.0	91.5	78.0	108.5	107.0	108.5	114.0	109.0	93.8	91.6	101.0*	97	95
Corn.....	46.0	52.9	52.9	48.5	62.1	80.0	66.4	55.4	67.3	73.6	74.8	58.5*	122	98
Oats.....	36.8	31.6	27.5	32.1	53.8	49.1	42.9	32.0	44.3	32.9	41.7	38.4*	102 +	101
Cotton.....	...	11.1	10.9	9.8	12.7	9.5	13.1	14.6	11.3	11.7	13.5	11.8	100	...
October:														
Wheat.....	83.4	118.5	89.1	73.4*	115.0	105.0	109.4	109.5	112.5	94.0	87.8	100.4*	96	93
Corn.....	44.8	53.6	52.3	46.0	61.1	72.5	60.5	60.0	72.5	82.8	75.8	65.2*	114	91
Oats.....	36.5	39.9	29.1	33.5	49.9	47.9	39.8	31.3	46.3	32.3	38.7	37.7*	103	97
Cotton.....	...	10.3	10.3	10.8	11.4	9.2	14.2	14.3	9.8	11.2	14.1	11.9	98	...
November:														
Wheat.....	81.0	117.5	88.5	79.9*	107.0	107.6	107.6	105.0	109.5	88.9	89.6	97.5*	93	89 +
Corn.....	43.1	54.1	48.5	45.6	59.5	67.2	59.3	52.3	54.4	72.6	68.4*	58.4*	110	87
Oats.....	35.9	30.6	30.2	34.1	46.8	48.7	39.1	31.2	42.3	35.4	37.8*	37.8*	99	95
Cotton.....	...	9.8	11.5	10.8	11.3	9.4	14.7	14.8	9.5	12.4	18.7	11.8	100	100
December:														
Wheat.....	89.4	118.5	86.3	73.8*	109.3	112.9	109.3	107.0	107.5	87.9	91.3	98.4*	94	88
Corn.....	42.4	53.9	46.1	46.7	59.5	69.5	64.3	47.8	69.5	50.8	68.8	52.9*	100	100
Oats.....	36.1	30.1	31.1	34.4	48.7	49.5	38.1	40.5	40.5	32.3	38.9	36.8*	103	97
Cotton.....	...	7.9	12.1	10.9	12.0	9.2	15.4	15.6	9.4	13.9	13.0	11.8	100	98
January:														
Wheat.....	87.4	119.5	83.3	70.7	109.3	113.7	107.5	107.5	110.5	90.6	...	102.8*	98 +	91
Corn.....	45.1	42.6	42.0	41.6	58.5	59.5	63.3	46.9	69.8	49.2	...	111.7*	98	90
Oats.....	39.0	30.2	30.8	35.4	49.9	49.8	46.5	31.6	49.2	32.8	...	30.5	98	93
Cotton.....	...	7.2	11.8	10.9	11.7	9.0	15.0	14.9	9.5	13.1	12.7	11.6	98	96

February.....	98.0	119.5	81.4	84.5	115.5	115.3	102.0	111.5	92.3	...	102.2 *</
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¹ Prices of wheat, corn and oats (per bushel), for Chicago, taken from Year Books, Department of Agriculture, from Cotton Waste, Shepperson Publishing Co., for twenty-eight interior towns in the United States.

Wheat = No. 1, Northern Spring.

Corn = No. 2 (1903-1908 inclusive) and Contract (1909-1913 inclusive).
Oats = No. 2 (1903-1907 inclusive) and Contract (1908-1913 inclusive).

Wheat, oats, August = 100; corn December = 100; cotton November = 100.
 Data = No. 2 (1903-1905 inclusive) and Contract (1906-1913 inclusive).

* Average for 9 years of 1902-1910

Average 1904-1913.
No. 2 Red Winter

* Average for 9 years.

MONTHLY RECEIPTS OF WHEAT, CORN, OATS AND COTTON, AUGUST, 1903, TO JULY, 1914¹
(000 omitted, 1903-1913.)

Month and Item	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	Average Monthly Receipts for 10 Year Period	Relative Monthly Receipts for 10 Year Period
August:													
Wheat { C.	3,553	5,119	5,003	9,140	7,079	5,553	6,703	11,784	8,550	6,206 }	...	11,879,900	100
Wheat { M.	4,193	3,397	4,273	2,536	6,262	3,616	4,550	4,890	6,602	8,761 }	...	8,490,300	50
Corn	1,085	1,703	8,497	10,774	8,922	8,491	13,049	24,373	13,118	14,451 }	4,291	12,874,500	100
Oats	5,532	11,702	10,152	10,169	50	141	129	200	183	260 }	251	100,000	13
September:													
Wheat { C.	3,785	4,148	2,021	1,908	5,104	2,261	2,705	2,990	2,978	7,364 }	...	15,658,300	132
Wheat { M.	10,566	9,927	12,735	6,914	6,094	19,108	16,161	13,105	13,810	13,529 }	...	12,516,400	114
Corn	1,937	15,031	10,240	12,834	11,456	14,848	8,084	12,171	11,337	17,477 }	13,205	9,831,200	47
Oats	3,972	7,620	10,240	8,324	11,456	10,458	9,084	644	8,527	765 }	703	904,500	47
October:													
Wheat { C.	3,294	3,736	3,161	2,529	2,921	2,648	3,602	1,554	2,008	5,161 }	...	15,227,600	128
Wheat { M.	11,198	14,276	14,752	9,823	7,217	10,497	10,000	11,727	13,727	18,085 }	...	8,891,500	54
Corn	10,235	6,008	12,013	11,956	11,627	8,888	8,520	7,705	9,264	17,857 }	5,795	10,457,700	61
Oats	6,364	1,947	1,020	1,020	680	1,403	1,304	1,147	1,210	1,258 }	1,458	1,163,400	91
November:													
Wheat { C.	5,220	2,685	4,885	1,745	1,125	1,758	2,515	1,202	1,593	5,083 }	...	13,777,400	116
Wheat { M.	12,735	12,916	12,307	8,369	7,619	8,504	9,169	8,186	12,724	17,808 }	...	6,268,400	56
Corn	6,087	5,774	5,774	5,774	5,774	5,774	5,774	5,774	5,774	5,774 }	2,805	7,204,600	66
Oats	1,168	1,168	1,303	1,480	998	1,369	945	1,195	1,295	1,794 }	1,368	1,275,500	100
December:													
Wheat { C.	2,774	2,168	1,138	2,158	1,291	1,289	1,567	766	1,066	1,657 }	...	12,020,000	101
Wheat { M.	12,264	11,596	13,417	11,257	9,566	12,457	10,005	10,005	13,176	13,257 }	...	10,949,900	100
Corn	6,342	3,486	8,203	6,320	8,476	6,883	5,576	10,293	6,256	9,881 }	13,842	9,282,100	51
Oats . . . . .	...	1,113	724	1,171	890	1,099	757	1,304	1,483	1,064 }	919	1,032,400	83
January:													
Wheat { C.	1,249	1,753	993	1,692	1,198	307	831	774	563	3,356 }	...	9,883,300	75
Wheat { M.	8,281	7,706	8,917	5,957	4,888	4,888	8,056	12,745	8,102	10,232 }	...	11,550,100	105
Corn	7,484	10,295	11,458	12,376	8,769	8,769	8,769	8,769	12,914	21,937 }	...	6,839,500	46
Oats	5,367	2,525	6,253	6,253	7,713	7,713	5,365	5,365	6,257	6,257 }	658	625,700	49

February: C.	1,002	521	510	573	661	751	808	641	1,369	2,653	7,712,700	65
Wheat {M.	5,761	6,133	7,238	7,846	5,535	8,718	8,718	8,577	13,522	8,347	10,891,000	99
Corn.....	7,305	6,831	7,940	13,158	7,226	7,718	11,977	10,525	12,563	2,458	6,348,400	91
Oats.....	6,778	3,861	5,886	5,481	6,204	5,650	6,726	5,871	7,084	9,583	6,548,000	84
Cotton.....	.....	263	406	711	353	448	227	344	747	362	438,100	76
March: C.	1,091	1,182	319	651	509	2,087	1,494	604	1,421	2,418	8,948,900	87
Wheat {M.	7,648	6,921	8,419	9,392	6,969	8,250	8,693	6,385	6,993	10,014	9,485,200	86
Corn.....	5,424	14,808	6,032	11,325	7,899	9,665	8,698	8,872	10,445	15,205	8,548,000	29
Oats.....	8,931	9,095	6,148	8,347	11,330	8,096	8,254	8,720	7,443	8,305	8,548,000	29
Cotton.....	.....	634	348	568	282	286	176	223	550	261	370,600	19
April: C.	691	2,467	222	901	597	768	557	631	970	2,824	6,268,900	53
Wheat {M.	3,004	3,558	4,993	8,809	4,258	3,647	8,960	4,003	3,018	5,397	5,014,000	51
Corn.....	8,250	4,498	4,146	7,979	6,460	6,653	3,705	4,898	3,015	6,525	6,525,000	10
Oats.....	3,921	4,100	6,384	9,147	7,723	5,428	5,782	5,553	6,146	7,440	6,525,000	10
Cotton.....	.....	450	214	245	191	280	186	130	270	200	237,900	19
May: C.	614	777	608	1,350	1,047	1,395	2,100	3,482	2,099	1,649	6,232,200	52
Wheat {M.	2,181	4,165	3,200	7,602	4,194	4,215	7,574	4,985	2,593	5,721	5,899,900	53
Corn.....	4,758	4,990	6,393	6,191	5,970	3,008	9,054	5,683	5,683	10,788	5,899,900	53
Oats.....	3,749	4,171	6,290	8,351	8,296	7,285	6,431	8,874	7,376	10,788	7,181,100	41
Cotton.....	.....	274	188	189	100	164	103	92	182	128	165,700	13 +
June: C.	708	182	358	920	416	493	1,312	596	2,167	2,167	5,260,800	48
Wheat {M.	3,947	4,080	4,348	.....	4,277	5,194	5,179	3,971	3,971	18,295	13,097,600	120
Corn.....	13,239	12,026	14,764	19,369	9,794	8,559	18,439	12,581	18,295	18,295	7,547,900	41
Oats.....	4,537	6,213	7,034	5,988	5,596	7,475	6,512	9,701	5,979	16,583	97,900	8
Cotton.....	.....	229	78	81	138	91	61	40	82	60	9,388,100	79
July: C.	939	2,910	7,704	1,349	3,042	4,539	2,682	18,890	3,435	10,028	9,388,100	79
Wheat {M.	3,698	3,217	4,027	6,750	5,032	4,545	5,219	2,491	2,491	4,373	6,920,800	63
Corn.....	6,638	10,331	8,060	8,570	5,052	6,514	5,003	5,941	5,941	10,005	5,827,900	47
Oats.....	5,854	6,288	4,195	5,222	4,007	6,362	6,945	6,945	6,945	10,005	77,500	6
Cotton.....	.....	180	78	48	127	63	83	23	47	59	77,500	6

¹ Figures for wheat (for Chicago and Minneapolis), corn and oats (for Chicago) representing bushels, were taken from American Elevator and Grain Trade, Chicago. Figures for cotton (for twenty-eight interior towns in the United States), representing bales, were taken from Cotton Factors' Association, New York City.
² Wheat, oats, A. 100; corn, December = 100; cotton, November = 100.
³ Average 1904-1913.
⁴ Nine year average.
⁵ Eight year average.
⁶ No quotations where space is blank.

APPENDIX
MEMBERSHIP OF AMERICAN TRADE UNIONS,
1897-1914

MEMBERSHIP OF AMERICAN TRADE UNIONS, 1897-1914
(00's omitted)

Unless otherwise indicated the data contained in this table were obtained from the reports of the American Federation of Labor. Figures in italics were obtained from the proceedings of the union or by correspondence with the central office of the union.

Name of Union	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914
MINING AND QUARRYING																		
Coal Hoisting Engineers.....	...	2	5	7	10	8	9	†	...	...	...	...	...	...	...	...	...	...
Mine Managers and Assistants.....	...	...	...	...	...	4	4	4	4	4	†	...	...	...	...	...	...	...
Mineral Mine Work.....	28	7	6	5	4	3	7	†	...	...	...	...	...	...	...	...	...	...
Miners, Western Fed.....	80	100	180	140	177	199	223	241	263	289	318	305	363	371	502	492	405	300
Mine Workers, Utd.....	87	89	618	1126	1880	1763	2478	2610	2660	2807	2680	2622	2514	2653	2683	2777	2680	3580
Quarrywork.....	...	...	...	...	...	...	12	26	36	38	41	45	45	50	35	40	40	40
Quarrymen.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Slate Work.....	4	4	†	...	...	...	...	8	8	9	18	20	21	14	7	4	3	3
Total in Group.....	209	442	749	1307	2171	1964	2795	2789	2982	2953	3120	2997	3071	2740	3107	3430	4315	3802
ROMANIC																		
Bricklayers and Masons.....	233	262	267	284	346	439	498	663	648	638	641	689	607	618	763	811	844	825
Bridge and Iron Work.....	...	...	...	...	60	110	160	115	108	98	116	104	96	109	122	109	159	139
Building Employes.....	...	...	...	...	...	...	...	8	†	...	...	...	...	...	...	...	...	...
Building Laborers.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Carpenters, Amal.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	64 ³	70 ³	59 ³	84 ³
Carpenters, Utd.....	16	16	18	20	26	32	45	50	48	43	53	81	73	71	78	91 ³	†	...
Cement Work.....	233	315	600 ³	684	871	1226 ³	1678	1618	1618	1708	1743 ³	1785	1886 ³	2007	1941	1955	2123	2123
Ceramic Tile Layers.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total in Group.....	...	2	3	4	7	11	14	17	14	19	21	19	17	10	21	24	27	30

Name of Union	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914
Diamond Work.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Engineers, Amal.....	19	19	18	18	18	19	29	29	29	31	34	28	31	28	38	34	38	3
Foundry Employees.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Furnace Work.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gold Beaters.....	5	5	5	4	4	9	15	15	15	15	15	10	10	10	7	6	5	6
Iron, Steel and Tin Work.....	105	105	110	140	159	145	159	145	109	114	108	74	68	58	48	55	63	65
Jewelry Work.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Machinists.....	140	100	136	225	325	355	488	557	485	500	500	621	484	569	671	598	710	754
Metal Mechanics.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Metal Polishers.....	36	42	45	50	56	84	128	128	103	100	100	100	100	100	100	100	100	100
Metal Work... Brotherhood.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Metal Work... Utd.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Molders.....	120	120	120	150	160	259	300	300	300	450	500	500	500	500	500	500	500	500
Pattern Makers.....	10	13	15	22	23	23	20	37	36	40	50	55	50	52	56	60	65	67
Pocket Knife Grinders.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Railway Carmen.....	18	10	11	30	40	121	163	177	160	243	366	251	176	228	260	287	280	287
Saw Smiths.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Shipwrights.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Shoe Mounters.....	7	6	6	9	13	16	16	17	15	15	15	14	10	9	11	11	11	11
Table Knife Grinders.....	2	2	3	2	2	2	3	3	3	3	3	3	2	2	2	...	...	...
Tack Makers.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tin Plate Work.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tube Work.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Watch Case Engravers.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Watch Case Makers.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wire Drawers.....	5	3	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wire Weavers.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total in Group.....	501	463	549	809	1052	1352	2047	2148	1670	1873	2122	2001	1778	1963	2103	2043	2180	2259

TEXTILES											
Cloth Weavers.....	2	3	3	2	1	1	1	1	1	1	50 ^a
Elastic Goring Weavers.....	2	3	3	4	5	6	7	8	8	9	60 ^a
Lace Operatives.....	46	30	16	10	8	7	7	8	8	10	11
Loomfixers.....	13	17
Machine Textile Printers.....	4	4
Print Outfitters.....	4	4
Spinners.....	24	21	24	27	26	25	22	22	22	22	22
Textile Work.....	27	25	22	34	27	106	105	100	100	100	162
Wood Sorters and Graders.....	14 ^a	14 ^a
Total in Group.....	81	85	69	70	147	105	151	145	147	161	230
CLOTHING											
Cloth Hat and Cap Makers.....	20	25	29	26	21	23	28
Garment Work.....	40	43	42	74	164	243	457	319	240	334	552
Glove Work.....	30	11	8	8	8
Hatters.....	66	63	69	76	86	90	89	89	60	95	98
Ladies' Garment Work.....	20	21	30	13	13
Leather Work.....
Special Order Clothing.....
Straw and Ladies' Hatters.....	50	50	50	73	93	109	138	159	160	166	167
Tailors.....
Total in Group.....	146	151	151	249	377	589	770	776	623	638	803
LEATHERS											
Boot and Shoe Work.....	125	94	43	47	88	146	297	320	320	320	325
Boot and Shoe Outfitters.....
Leather Work on Horse Goods.....	1	4	10	21	32	42	48	46	40	40	37
Leather Work.....	3	23	36	25	10	10	8
Shoe Work, Uld.....
Trav. Goods and Lea. Nov. Work.....	1	1	8	3	3	5	16	15	13	9	7
Total in Group.....	127	99	55	71	126	215	397	406	383	380	377

at Union disbanded or amalgamated with another union.

New York Labor Bulletin.

1 Average of preceding and following year.

Name of Union		1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914
TRANSPORTATION																			
Commercial Telegraphers.....
Locomotive Engineers.....	303	377	366	360	416	464	500	556	609	657	689	689	689	674	699	719	759	759	759
Locomotive Firemen.....	815	870	860	850	436	514	660	670	617	665	658	668	668	668	668	683	911	869	869
Locomotive Firemen.....	50	80	130	200	347	400	478	340	313	213	208	260	235	208	230	250	250	250	250
Locomotive Firemen.....	50	80	130	200	347	400	478	340	313	213	208	260	235	208	230	250	250	250	250
Maintenance of Way Employ.....	89	40	39	46	87	123	130	132	135	100	107	100	91	80	91	80	91	80	91
Maintenance of Way Employ.....	89	40	39	46	87	123	130	132	135	100	107	100	91	80	91	80	91	80	91
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Maintenance of Way Employ.....	89	40	39	46	87	123	130	132	135	100	107	100	91	80	91	80	91	80	91
Maintenance of Way Employ.....	89	40	39	46	87	123	130	132	135	100	107	100	91	80	91	80	91	80	91
Maintenance of Way Employ.....	89	40																	

PAPER, PRINTING AND BOOK- BINDING		86	26	28	26	53	70	81	65	66	68	80	79	71	78	70	85	91	94
Bookbinders.....	15	16 ¹	17 ¹	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lithographers.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lithographic Press Feeders.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lithographic Workmen.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Machine Printers.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Paper Makers.....	1	1	1	4	18	41	107	88	50	35	31	43	10	16	24	28	40	44	...
Paper Box Work.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Photo Engravers.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Poster Artists.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Printing Pressmen.....	50	58	72	91	100	119	144	160	170	100	166	173	178	186	190	190	190	193	...
Pulp and Paper Mill Work.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Steel Plate Printers.....	6	4	4	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Steel Plate Transfers.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Stereotypes and Electrotypes.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tip Printers.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Typographical.....	231	236	308	331	349	368	484	468	467	450	433	437	449	478	511	538	559	585	...
Total in Group.....	379	391	428	480	553	697	872	919	904	871	853	867	828	893	968	1020	1062	1109	...
LUMBER AND WOODWORKING		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Box Makers and Sawyers.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Coopers.....	16	24	32	43	57	64	79	69	63	68	67	47	43	44	48	48	48	47	183
Piano and Organ Work.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Timber Work.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Upholsterers.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wood Carvers.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Woodmen and Saw Mill Work.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wood Work.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total in Group.....	55	117	159	256	318	341	479	516	419	359	270	198	190	280	290	255	251	248	...

† Average of preceding and following year.

* New York Labor Bulletin.

† Union disbanded or amalgamated with another union.

Name of Union	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914
CHEMICAL, CLAY, GLASS AND STONE																		
Brick, Tile Work.....	8	5	10	14	17	41	55	72	41	64	43	28	25	38	34	34	39	32
Flint Glass Work.....	72	71	71	80	81	69	69	69	69	69	69	70	81	89	89 ^a	87 ^a	91	99
Glass Bottle Blowers.....	40	40	42	42	47	59	61	66	70	78	80	88	93	100	100	100	100	100
Glass House Employees.....	...	...	...	...	...	...	6	6	2	2	†	12	11	12	12	11	13	12
Glass Work, Amal.....	...	...	...	2	3	7	20	17	17	16	14	12	11	12	12	11	13	13
Granite Cutters.....	45	46	48	59	70	82	94	99	103	113	128	130	131	134	133	135	135	135
Potters, Operative.....	6	8	13	22	29	49	61	88	56	56	58	59	59	58	59	65	65	77
Potters.....	2	2	†	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Powder Work.....	...	...	...	...	...	...	4	7	8	6	5	...	...	...	...	...	...	...
Stone Cutters.....	60	66	70	75	75	80	80	80	80	80	85	83	89	80	86	89	66	60
Stoneware Potters.....	1	1	1	1	†	...	...	9	12	10	6	10	11	18 ^a	15 ^a	15 ^a	12 ^a	22 ^a
Window Glass Snappers.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Window Glass Work.....	...	...	...	...	...	...	...	...	58	67	66	67	69	70 ^a	62 ^a	60 ^a	40 ^a	39 ^a
Total in Group.....	223	228	255	295	332	391	462	486	513	551	552	552	574	601	594	595	593	578
FOOD, LIQUOR AND TOBACCO																		
Bakery Work.....	20	21	31	45	64	102	154	162	120	106	110	105	107	127	138	146	151	157
Brewery Work.....	100	100	107	183	235	291	300	305	340	360	400 ^a	455	458	454	535 ^a	685	660 ^a	676
Cigar-makers.....	868	887	815	571	377	418	448	468	466	466	465	490	471	515	514	500	485	485
Flour Mill Employ.....	...	...	...	...	...	...	21	21	9	7	7	8	8	3	3	3 ^a	...	...
Stogie Makers.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	15	16
Tobacco Work.....	41	46	41	60	43	41	52	56	54	55	51	46	43	41	40	37	36	37
Total in Group.....	444	454	494	659	719	846	970	1012	970	963	1048	1035	1125	1154	1220	1308	1337	1399

Name of Union	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914
MISCELLANEOUS																		
Barbers.....	22	30	40	69	116	160	208	236	227	231	241	255	255	265	285	269	318	343
Bill Posters.....	...	...	...	...	...	...	10	13	14	14	14	14	14	14	14	14	14	14
Broom Makers.....	1	1	3	4	8	9	11	11	10	10	9	8	8	8	7	7	7	7
Brushmakers.....	...	...	...	...	...	...	...	7	7	5	5	4	2	2	2	2	2	2
Trade and Fed. Un'n. (A. F. of L.)	148	168	168	349	469	678	848	868	868	860	880	880	100	810	860	879	888	878
Fur Work, Assoc.....	...	...	...	...	...	...	...	3	4	4	4	4	4	2	2	...	...	...
Fur Work.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Horsehoofers.....	20	20	20	21	23	28	44	42	42	41	44	61	72	72	40	52	53	57
I. W. W. (Chicago).....	...	...	...	...	...	...	...	...	143	104	07	138	107	91	128	163	143	180
I. W. W. (Detroit).....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	56	107	60	80
Laundry Work.....	...	...	...	...	...	...	21	42	65	46	31	40	35	29	26	26	26	28
Lobster Fishermen.....	...	...	...	...	...	...	...	...	...	...	0	6	†	...	...	...	...	...
Mattress Work.....	...	...	...	...	...	...	...	15	15	†	...	...	...	...	...	...	...	...
Oil and Gas Well Work.....	...	...	...	...	...	...	...	4	5	3	4	4	4	...	...	...	...	...
Rubber Work.....	...	...	...	...	...	...	...	10	3	1	...	...	...	...	...	...	...	...
Stationary Firemen.....	...	...	...	...	...	...	...	11	24	41	62	143	180	123	125	173	107	160
Steam Engineers.....	7	12	18	27	48	65	142	176	175	175	175	168	161	160	160	177	200	203
Total in Group.....	192	209	255	498	731	1047	1480	1316	1093	1022	1007	1104	933	932	1072	1280	1261	1234
Total in all Groups	4445	4971	6041	8054	11236	13743	19129	20728	19450	19003	20776	20904	20031	21380	22365	24408	27010	26744

† Union disbanded or amalgamated with another union.

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